

VIRGINIA WILDLIFE

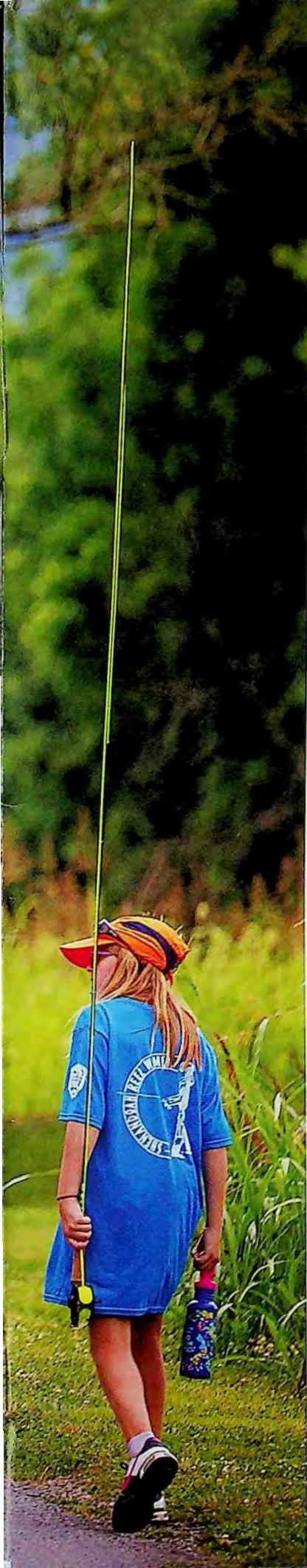
NOVEMBER/DECEMBER 2022

FOUR DOLLARS



Inside:
Why Wild Game?





VIRGINIA WILDLIFE

NOVEMBER/DECEMBER 2022

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Cover: Two braces of ducks consisting of (left to right) a female mallard, black duck, male gadwall, and female gadwall, see page 6. ©Wade Truong

Left: The Virginia Wildlife Grant Program provides opportunities for youth and the underserved to experience the outdoors, see page 33. ©Meghan Marchetti/DWR



ETHAN HUNT
DWR Creative Content Intern

During the internship, I learned the ins and outs of magazine production. I edited others' work, sat in on production meetings, interviewed the highly knowledgeable DWR biologists and staff, and produced my own articles under the supervision of *Virginia Wildlife's* extremely competent editor, Molly Kirk. But I also got to get out from behind a desk and discover more about DWR's field work, with trips to a Wildlife Management Area, on an electro-fishing expedition, and to help with preparing for a DWR Outreach event at the Annual Upper Mattaponi Pow Wow on the Mattaponi Native American reservation.

Then in late July, the name Steve Crandall resurfaced. Tom Wilcox, DWR's Director of Engagement; Heath Brown, the WMA management intern through the Crandall Leadership Program; and myself would travel to DBBC Basecamp in Nelson County to learn about Crandall. In 2022, DBBC and the Anheuser-Busch Foundation donated \$30,000 to DWR in his memory to fund the Crandall Leadership Program, making an hourly wage for me and Heath possible.

The visit found us exploring the grounds while learning about Crandall's love of the outdoors and DBBC's own conservation efforts. In the brewery, DBBC's Founding Brewmaster and creator of the flagship Vienna Lager explained the brewing process. At the distillery, DBBC Assistant Distiller revealed secrets of the company's distilling process, and we had the privilege of trying Crandall's whiskey, poured from a barrel marked with his signature.

At every stop I learned more about the company that made my internship experience possible. But more importantly, I got to see how an individual's passion can impact others. Everyone we met had a story to tell, a moment to share, and a lesson to impart from Crandall. By the end of the day I almost felt I had met him myself.

Even though Crandall passed away in 2021, his legacy lives on with DBBC's dedication to stewardship of the outdoors. In the true spirit of DWR's tagline of "The Outdoors are Better Together," the Crandall Leadership Program allows young people with a passion for the outdoors to explore careers and advocate for wildlife and conservation. Writing for DWR gave me an outlet for my passion for wildlife and a way to learn more about a topic that has always been important to me.

My time with DWR has been informative, interesting, and far more fun than I ever expected. I feel lucky to have had this experience and grateful to DWR, DBBC, the Anheuser-Busch Foundation, and Crandall for giving me the opportunity to be a steward of the outdoors.

I first heard of Steve Crandall while interviewing for the Creative Content Intern position with the Virginia Department of Wildlife Resources (DWR). The name registered only briefly through a haze of worry about my resume and writing ability, and if I had asked enough questions.

Two months later, while sitting in DWR headquarters in Henrico, I again heard the name Steve Crandall during the internship orientation. Preoccupied with my first assignments and human resources paperwork, I again paid it little mind other than noting that my paid internship had been made possible through the Crandall Leadership Program—a new DWR internship program funded by a legacy gift in memory of Devils Backbone Brewing Company (DBBC) founder, philanthropist, and outdoor enthusiast Steve Crandall.

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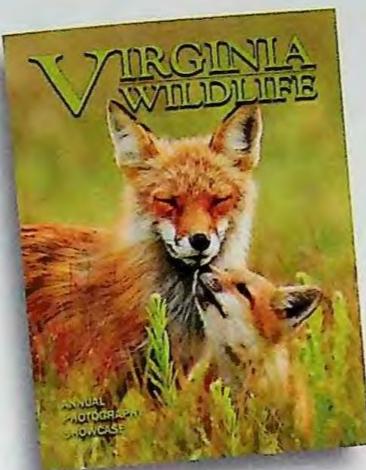
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Conserve and manage wildlife populations and habitat for the benefit of present and future generations. Connect people to Virginia's outdoors through boating, education, fishing, hunting, trapping, wildlife viewing and other wildlife-related activities. Protect people and property by promoting safe outdoor experiences and managing human-wildlife conflicts.

From Our Readers



Well Done

I just paged through the latest copy of my *Virginia Wildlife* [the July/August 2022 issue]. What a celebration of our wildlife!

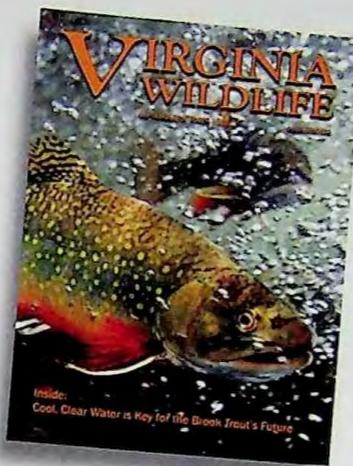
I spent almost 28 years in the Navy as SEAL. I spent so much time outdoors with the wildlife critters that I think I can relate better to them than most humans. I endorse hunting, but for me, I have too much respect for how hard it is for them to make a living. Our lives are so much richer for having the presence of all wildlife with us in the outdoors. This month's copy of *Virginia Wildlife* was so good that I had to comment. If a picture is worth a thousand words... then you crammed a heck of a lot into 50 pages.

Well done to the photographers. Thank you.

Robert Richardson, Virginia Beach

Robert, the Photography Showcase issue is always our favorite issue to put together! Thanks for the kudos.

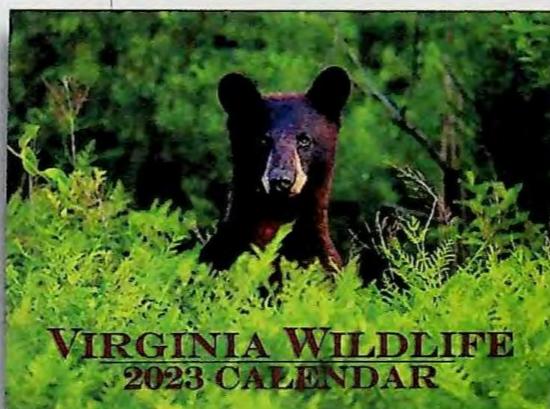
- Molly Kirk, editor



Great Issue

Read it cover to cover. Great articles and awesome pictures.

Barry Thomas Whitten, from Facebook



More to Virginia

Every year, I give [the *Virginia Wildlife* calendar] to my friends across the country to showcase our diverse Virginia wildlife. I even share one to New Zealand! The calendar shows that Virginia is more than just Colonial, Revolutionary or Civil War history.

Thomas Chad Piazza, from Facebook

On Our Website...

Good Weeds

Many native plants have "weed" as part of their common name, which can be off-putting as people are seeking plants to beautify



their home spaces. But many "weeds" are beneficial for wildlife.

virginiawildlife.gov/blog/good-weeds/



Seventeen Tips for Catching Walleyes

Some tips and tactics for when you're targeting Virginia's abundant walleye population.

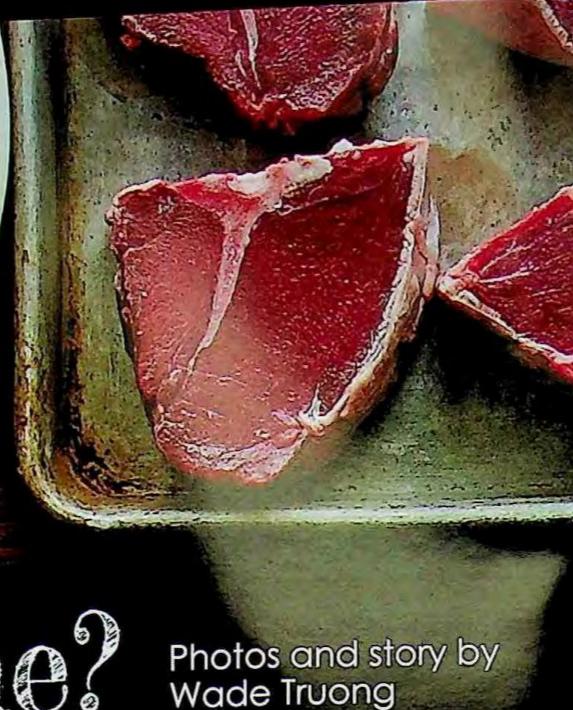
virginiawildlife.gov/blog/seventeen-tips-for-catching-walleyes/

Subscribe to monthly Notes from the Field email newsletters focused on hunting, fishing, wildlife watching, boating, and Conservation Police so you don't miss any stories! Sign up: virginiawildlife.gov/the-outdoor-report/

We want to hear from you! We welcome letters to the editor, questions for our staff, photos you capture of wildlife, and experiences you want to share. Please include your name and address when you send correspondence to editor@dwr.virginia.gov via email or by mail to Editor, Virginia Wildlife, P.O. Box 90778, Henrico, VA 23228-0778. Correspondence chosen for publication may be edited for clarity and/or length.

Connect with Us!





Why Wild Game?

Photos and story by Wade Truong



My fridge is a disaster. Despite my best efforts, there's usually some dried blood caked to the glass shelves, and depending on the season, also a whole or mostly whole animal on one of the shelves that would usually be home to the orange juice or leftovers. The usual suspects in a home refrigerator are all there—condiments, eggs, cheese, and a drawer full of greens—but scales, feathers, and fur are equally the norm. While I understand that having a few

whole ducks in the fridge isn't typical, I couldn't imagine anything different at this point in my life.

I've spent a career in the restaurant industry, from the time I was 12, when my parents opened a restaurant, to just a couple of years ago when I was an executive chef. For more than two decades, I spent more time in a restaurant than in my own home. In that time, I've learned more about food than I thought possible, eaten well outside of my pay grade, and tried foods that most people

will never get to try. I prepared multiple lifetimes worth of food and learned how to cook with extreme efficiency, but more than anything else, I learned about how people interact with their food.

Twenty-plus years of watching people eat is how I would best describe my career. I learned how emotional eating is. Food tastes better when you're in a good mood, and angry people don't enjoy their meals. Some people love trying new things, but most are scared of not liking their meal. Guests



A noted chef explains how his perspective on food shifted when he started hunting.



love seeing exotic and rare ingredients on menus, but the burger is the most ordered menu item in America. We love eating because it brings us comfort, joy, and satisfaction.

But somehow, food processing is considered explicit content on many media channels. As a society, we don't like being reminded of the costs of the food we love. I've been asked to debone steaks, take the heads off of shrimp and lobster, remove skin and bone, rename, rebrand, and hide what foods are in

the name of consumer demand. Wild-caught, sustainable, organic, free-range, green—they're marketing terms that drive sales, and they come from a good place, but there is still a disconnect with the food itself.

Food with a Story

The reality is, many people would be disgusted with the state of my refrigerator because they don't like being reminded that food involves death. Whether it's a plant, fish, bird, or mammal, all of our

food was once alive. That idea—that all food comes from death—was a concept that I didn't fully explore until I started hunting.

In my mid-20s, I was a food and wine snob, which was ironic because I was plenty broke. The most interesting part of my job was trying new foods, and I learned that the best foods usually came with a story. Farmers, watermen, and artisan makers always had the best stuff. They weren't just delivering ingredients, they were sharing their experiences.

They told me about good seasons and bad ones, sacrifices and triumphs, windfalls and failures. I was enamored with their stories, and I loved their food. I craved the emotions tied to the flavors. It made me realize that there is so much more to taste than what your mouth tells you, and it's beyond what you see and what you smell. It's how you feel, and how food makes you feel.

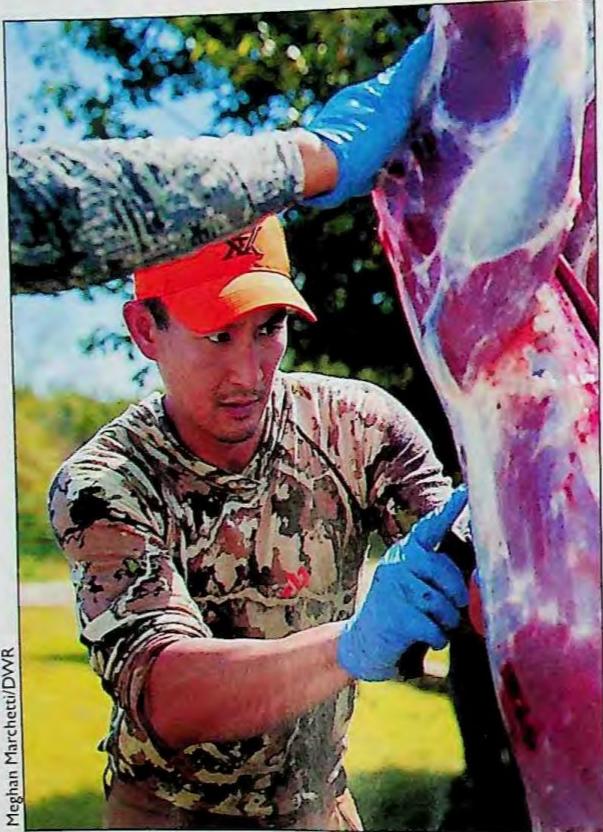
I wanted my food to have a story, so I started hunting. I taught myself how to hunt whitetails—it was a steep learning curve without a mentor, but

I found success after dozens of cold days in a tree stand. My first deer tasted different from any food I've ever eaten. I was familiar with venison, but this was mine. It tasted like a frosty morning in the hardwoods, the sensation of warm blood on cold finger tips, the sound of dry twigs snapping, the smell of sweat from dragging the deer up a steep hill.

The meals that deer provided changed my perspective on food forever. I became increasingly obsessed with procuring my own food. I started expanding my hunting season, my larder,

and my experiences. Bow hunting gave me a few extra weeks in the deer woods, ducks and geese showed me the beauty of a predawn marsh and taught me to respect cold water. Squirrel hunting humbled me, doves made me a better shot, turkeys taught me that anything that can go wrong probably will.

I started fishing more, gardening and foraging, exploring places I didn't know existed, learning about things I never thought about before. I learned that inconvenient places and times are the most beautiful, and how difficult it



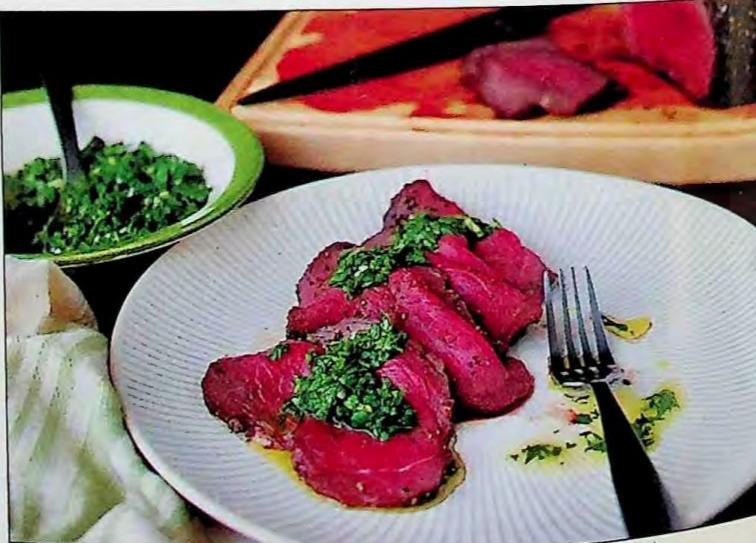
Meghan Marchetti/DWR

Wade Truong processes a deer during a workshop on processing wild game.

I wanted my food
to have a story,
so I started hunting.



A harvest of wild ducks.



One of many dishes prepared with venison—black pepper-crusted venison roast with chimichurri.

is to grow vegetables. I know the raw power of a green cobia, the ability of a morel to disappear, and the fleeting, ephemeral nature of the soft shell crab. I realized why we crave fat, salt and sugar, tender meat, smoke, and fire. I learned how to preserve food with heat, pressure, salt, and acid (there should really be a monument dedicated to celebrating modern refrigeration).

Cooking wild food made me a better cook. Wild plants and animals are inconsistent. Season, habitat, and the individual all influence the taste of wild

foods. They're products of their environment, they have terroir, and they are best treated as such. Their size, shape, fat content, and density differ from the domestic types vastly—you can't cook a wood duck the same way you could a Peking, or smoke deer ribs the way you would pork ribs. And the more wild ingredients I learned to cook, the more I understood cooking as a whole.

The inconsistency and nature of wild food also gave me a new appreciation for scarcity. I couldn't just get as much as I wanted, so I had to make what

I had last. This taught me to make the most of every animal I killed. I learned how to cook tough cuts, and how to utilize bones, fat, and organs.

And while wild food can be inconsistent, it makes up for it in variety. At any given time, I have 20 species of animals in the freezer, not counting fish. Good luck finding more than half a dozen in a grocery store. This variability in food is the antithesis of my previous career in food, where ingredients were expected to be exactly the same, every time. I realized that our desire for

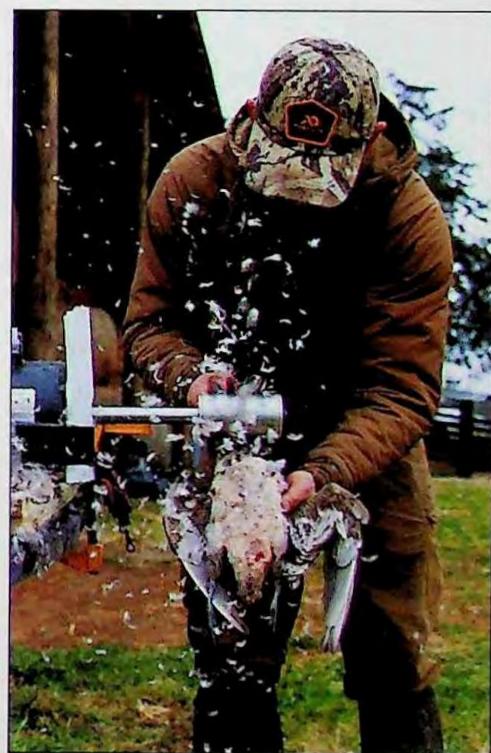


Smoked goose, day lilies, cucumber, arugula, and pickled fava beans make for a delicious gourmet meal.

I learned that inconvenient places and times are the most beautiful, and how difficult it is to grow vegetables.



Wade Truong with a nice Chesapeake Bay cobia.



Cleaning ducks is all part of meal preparation.

consistency in our food has robbed it of flavor, and the reliability of domestic food has made us less tolerant of variety. I've eaten ducks shot out of the same flock that varied in taste from "corn fed" to "low tide." We judge beef steaks on their tenderness, not flavor, because they all kind of taste the same.

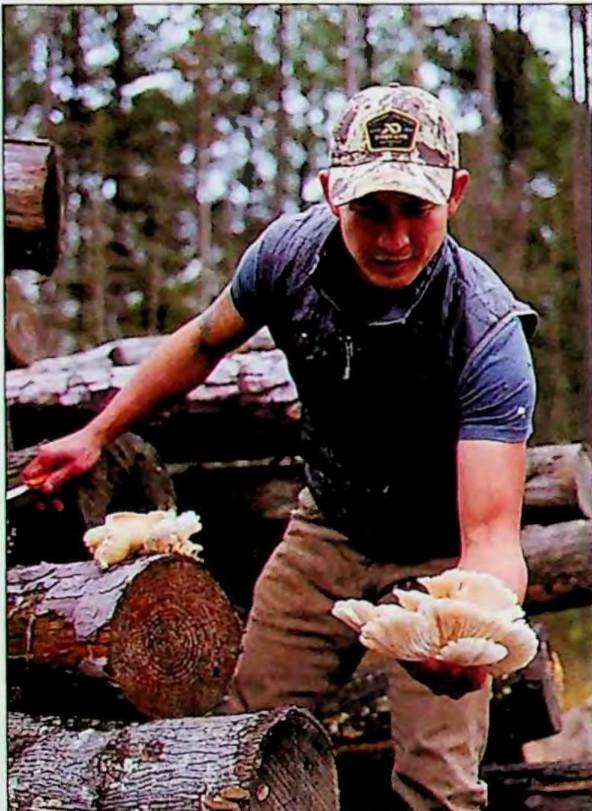
Feeding My Soul

I now spend my entire year chasing food around. To be clear, I don't save any money doing this. It would be

cheaper and easier to buy all my food, but it doesn't taste the same. It doesn't feel the same, and it doesn't nourish me the same way. Vegetables from my garden taste sweeter, the fish I catch taste fresher, and wild meats have more depth of flavor. These flavors come at the additional cost of bites, scars, and discomfort. I've never been as cold as I've been duck hunting, or sweat as much as an August day poling down a creek. I've never had to check for ticks after a run to the grocery store, or had to navigate a

storm on the bay to eat at a restaurant.

These experiences have made me appreciate the luxuries I used to take for granted—reliable refrigeration, fast delivery, shelf-stable food. Summoning a hot meal from an app and having it delivered to your door is a modern marvel. Having access to food grown hundreds or thousands of miles away is a luxury, having it delivered to your door in two days or less is a miracle. Modern food processing has made calories cheap, consistent, and easy to chew. Feeding



Wade Truong forages for native food such as these oyster mushrooms.



Wild game is a family affair. Here, Rachel Owen, Wade Truong's partner, poses with a turkey that she harvested in the spring.

Feeding yourself
is easier than ever;
nourishing your soul
is harder.



A pheasant back mushroom burger was created from foraged ingredients.

yourself is easier than ever, nourishing your soul is harder.

I started hunting and pursuing wild food because I wanted to taste new food and explore the emotional aspect of flavor, but what I found was that I was exploring my own needs. What these pursuits have given me is a sense of purpose I never had, and a connectedness to the natural world that I didn't know was possible.

Like every other species out there, we have to consume. It's the way life

works—life eats life. I've chosen to live as close to this reality as I can. I like my hands dirty, my food clean, and I want every meal to remind me of what it takes to fulfill my basic needs. The macabre fridge is just a byproduct of my choices.

Every now and then, I think back to my life before I started pursuing wild foods, and laugh at how much it has changed my life and shifted my priorities. I spend my money acquiring experiences instead of goods, I care less and less about how people view me and the

things I own, and more and more about my place in the world and how I view myself in it. These pursuits have taught me that I may not have everything I want, but nature has everything I need. ↗

Wade Truong is a lifelong Virginian and self-taught chef and hunter whose work has been featured in The New York Times and Garden & Gun. To learn more about Wade and his company, Elevated Wild: elevatedwild.com.



ELEVATED WILD

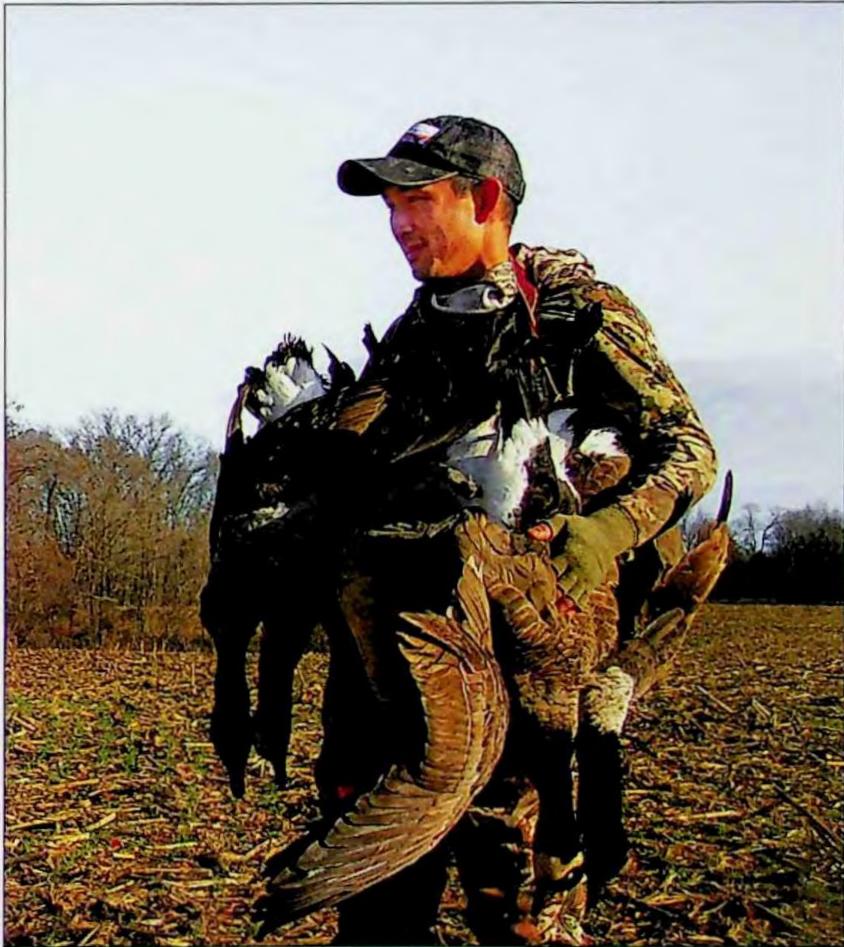
THE UNTAMED TABLE



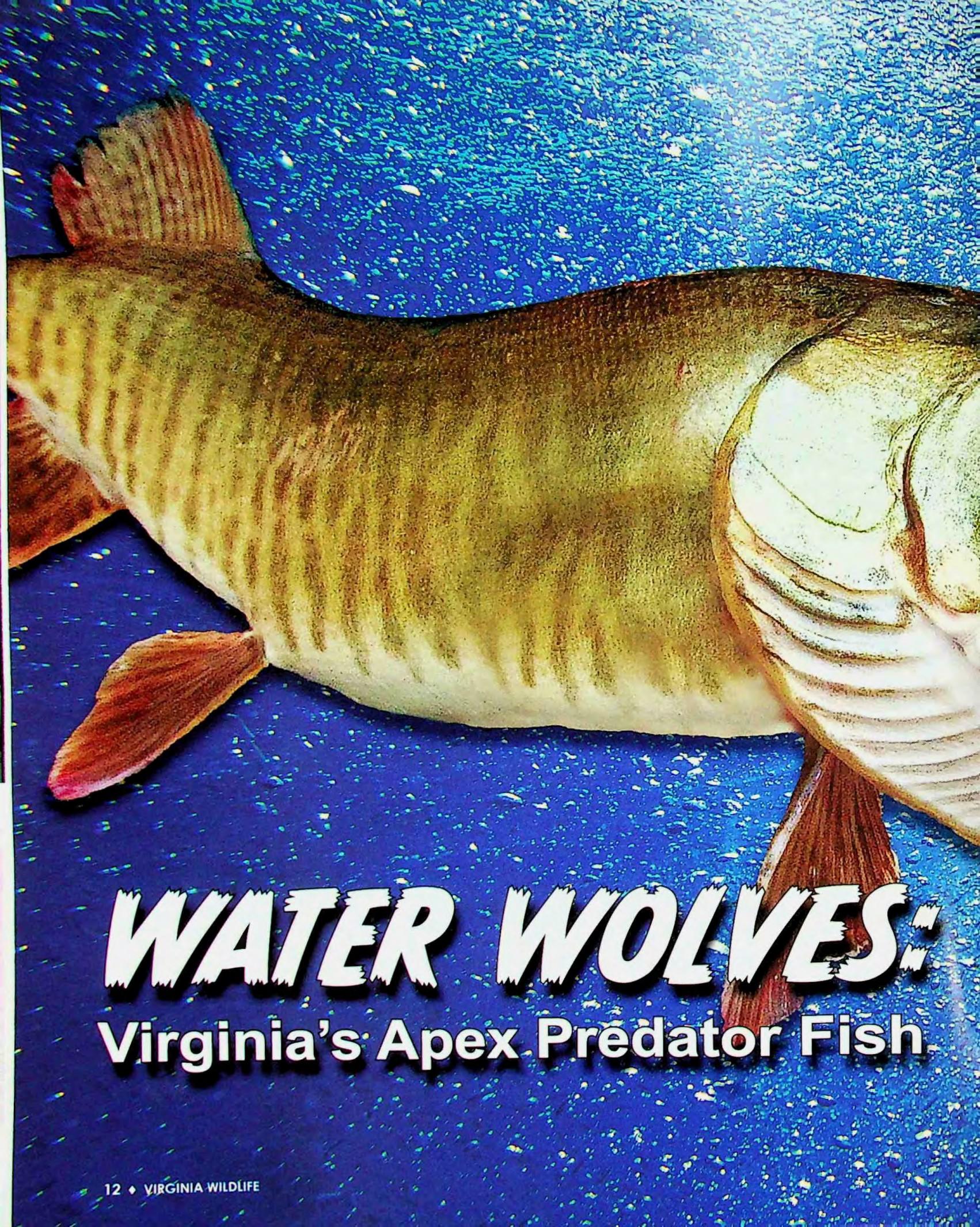
Bacon-fried shad roe over grits with venison bacon and ramps.



Beaver can be harvested and eaten, if prepared correctly.

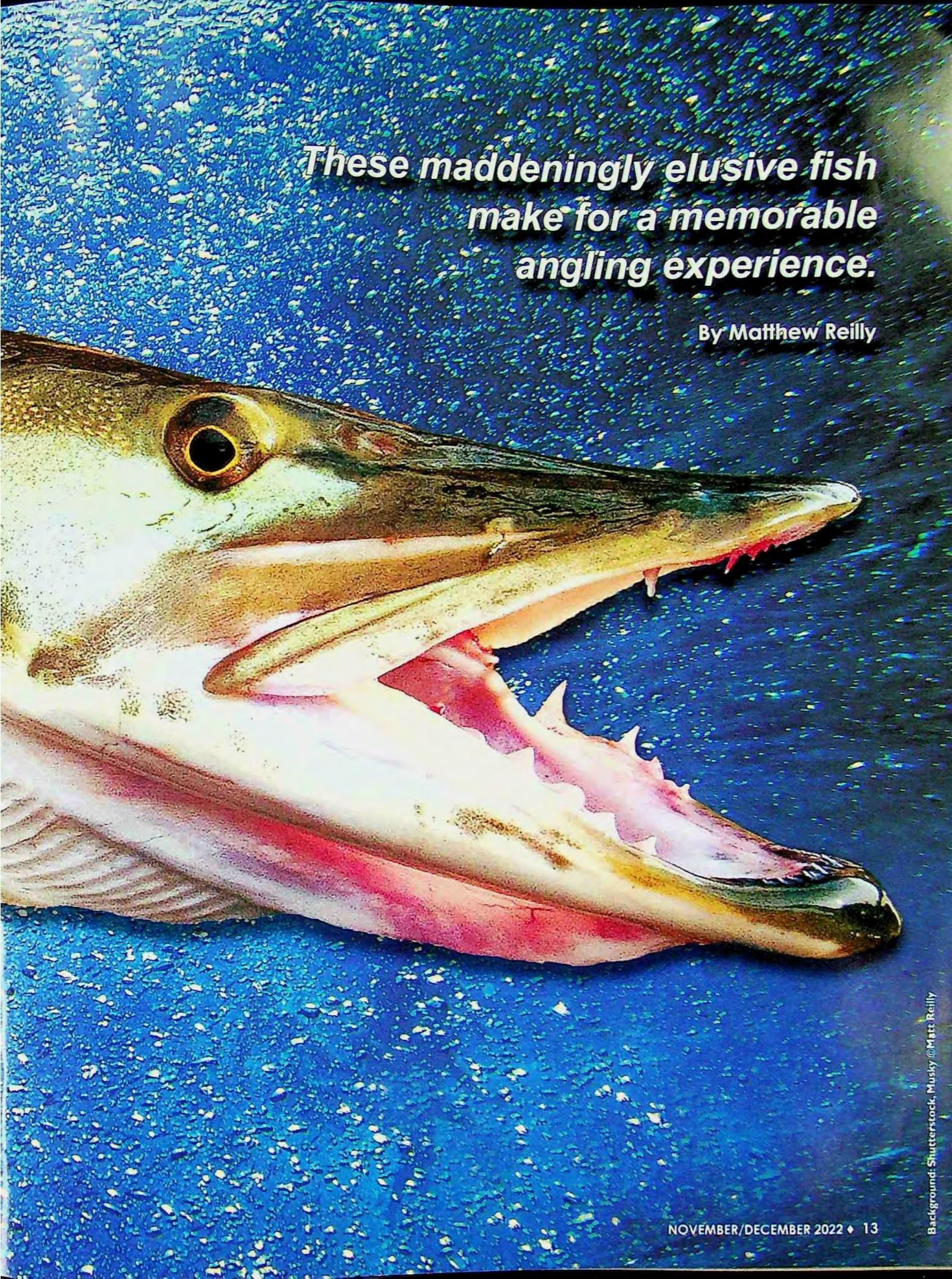


Wade Truong carries the day's harvest of Canada geese.



WATER WOLVES:

Virginia's Apex Predator Fish.



*These maddeningly elusive fish
make for a memorable
angling experience.*

By Matthew Reilly

Aleaden sky hangs low over an ancient river in Virginia's Appalachian Mountains, the sharp contrast of snow-covered ridges, white-trunked sycamores, and dark rock reflected in the water's surface. A lone boat and angler populate the landscape, enveloped in cold-weather gear, diligently and repeatedly heaving a big lure over a deep pool, methodically working it back to the boat, and finishing each retrieve with wide, swinging oval maneuvers beside the boat. In a split second, the depths explode as the white form of a four-foot-long toothed missile engulfs the lure swimming over open water, and the river's surface froths in a frenzy of whitewater and writhing beast.

A very select, but rapidly growing, cohort of Old Dominion anglers have come to live for just such split seconds, moments that are the culmination of hours of fruitless casting, often in harsh conditions, stacking skill and will against low probability in the pursuit of one of Virginia's top predatory fish—the muskellunge.

Fast, Aggressive, and Toothy

The muskellunge (*Esox masquinongy*)—or, musky—gets its name from the Ojibwa word “maashkinoozhe,” which translates to “ugly pike.” The largest member of the pike family, the musky sports an elongated, cylindrical body headed by a broad mouth full of razor-sharp teeth and propelled by a powerful, forked tail with pointed tips.

The majority of adult musky in Virginia range between 30 and 43 inches in length, but can surpass 50 inches in length. In regions where the two species overlap, anglers sometimes have trouble distinguishing musky from northern pike, and while there are a handful of common flank patterns and color phases of musky, they all feature dark vertical bars or spots against a lighter, olive-green background. Pike have darker bodies with lighter or cream-colored spots.

The musky's menacing physiology betrays their lifestyle and perch atop the food chain. A long, articulating body grants them the ability to sprint short distances with lightning speed, while their shovel maw of piercing teeth makes them adept at grabbing large, fleshy prey in an ambush.

The musky's diet is varied, but is made up primarily of other fish. Shortly after hatching, young musky will feed on zooplankton, but quickly adapt to feeding on small baitfish. As the juvenile musky grow, they are able to feed on larger and



A challenging fish, musky are well worth the effort, especially when caught on a fly.

©Matthew Reilly

larger prey, and adult musky may also prey on small mammals, amphibians, and even birds opportunistically.

As ambush predators, musky prefer slower-moving pools in rivers and utilize vegetative and woody cover and rocky structure in both moving and still waters.

Musky are a cool-water fish, and are most active in water temperatures ranging from 62°F to 77°F. In Virginia waters, spawning generally occurs between late March and May at water temperatures ranging between 50°F and 60°F. Like the rest of the *Esox* clan, musky are broadcast spawners, meaning the female will release adhesive eggs onto emergent vegetation, leaf mats, or gravel in slack water pools to be fertilized by one to three male fish.

In Virginia Waters

Musky are native to portions of the St. Lawrence River, Hudson Bay, Great Lakes, and Mississippi River basins, and naturally occur in both rivers and lakes within that range. Despite the existence of native musky populations in the Ohio River and Upper Tennessee River watersheds, the fish's native range is not thought to include the Virginia portions of those systems.

The presence of musky in Virginia waters is considered to be the direct result of introduction efforts by the Virginia Department of Wildlife Resources (DWR) that began in 1963. River fisheries dominate the musky scene in the Old Dominion, with the Shenandoah, James, and New rivers being the primary, and most robust, fisheries. However, the Clinch and

Powell rivers, as well as several impoundments like Claytor, Shenandoah, Hungry Mother, Rural Retreat, Burke, and South Holston lakes, also feature musky populations. These fisheries are maintained either through annual stockings or natural reproduction.

The Shenandoah River system is an example of a fishery that is supported largely through stocking efforts. "Our primary fisheries include the South Fork Shenandoah and the Main Stem Shenandoah rivers," said Jason Hallacher, DWR Region 4 fisheries biologist. "We have documented limited natural reproduction occurring in both of these fisheries, but it has been determined that the populations are not capable of sustaining themselves without stocking. Both of these are considered class 'A' waters, which means they have priority over other waters in the region to receive advanced fingerling stockings. 'A' waters give anglers the best chance to catch a musky, have better than average habitat and access, and are considered destination fisheries."

DWR also maintains the North Fork of the Shenandoah River and Lake Shenandoah in Rockingham County as class "B" waters. "These waters are considered diversity waters," said Hallacher. "I usually recommend that anglers bring bass and

musky gear on these types of waters, so anglers can target bass in the shallower areas and then switch to musky tackle in the pools."

From the city of Lynchburg upstream to the confluence of the Cowpasture and Jackson rivers at Iron Gate, the upper James River offers anglers an excellent fishery sustained entirely by natural reproduction. "Population estimates reflect a strong musky population in the upper James River, with densities that rival those of musky fisheries in Wisconsin and Minnesota," said Tyler Young, a DWR fisheries technician in Region 2.

Coupled with natural reproduction, a powerful catch-and-release ethic among musky anglers allows a strong fishery to persist on the upper James. "DWR recently completed a four-year tagging study on the upper James to evaluate angler usage and exploitation," said Young. "This study found that 99 percent of fish caught by anglers were released and approximately

Do Musky Impact Smallmouth Numbers?

Anywhere an aggressive, predatory fish exists, or is introduced, within the same waters as other prized game fish, questions often arise concerning the effect such a predator can have on populations of other fish. As perhaps Virginia's top smallmouth bass destination, the New River has been the setting for just such a debate. Given these concerns, DWR has funded two research projects in collaboration with Virginia Tech to study the impacts of musky predation on smallmouth bass populations.



Shutterstock

By examining and quantifying stomach contents, Brenden et al. (2004) and Doss (2017) found that smallmouth bass comprised 11 percent and 3 percent, respectively, of an adult (>32") musky's diet in the New River, percentages that pale in comparison to those of suckers, sunfish, and minnows. "The two studies do show that musky will prey on a variety of species and ultimately can compete for food resources with other fish species that feed on similar prey items. However, these impacts are not believed to be having a population-level effect," said Jeff Williams, DWR Region 3 regional fisheries manager.



©Matthew Reilly

The majority of musky fishing is catch and release.

60 percent of the musky in the upper James are caught at least once a year."

Southwest Virginia's New River is Virginia's largest musky fishery by number of fishable miles, sustaining a fishable population for most of its 170 miles within the Commonwealth. "In 2007 DWR switched to stocking advanced fingerlings (8 to 12 inches) with the goal of increasing survival by reducing loss through predation," said Jeff Williams, DWR Region 3 regional fisheries manager.

"This switch to the larger fingerlings likely helped to contribute to the New River becoming a self-sustaining population. We will never know the exact number of musky that are successfully spawned in the New River each year, but we are beginning to develop an index of recruitment measured as the number of juvenile musky we encounter per hour of electro-fishing in our winter musky sampling. The 2021 year-class of musky in both the upper and lower New River is the strongest one we have seen in at least the past four years," Williams said.

The Fish of 10,000 Casts

Nicknamed "the fish of 10,000 casts," the musky's primary defense against anglers is the sheer amount of time and effort often required to catch one. Even in the most densely populated fisheries, musky are a low-density fish. Add to that the fact that they make a habit of consuming large meals rather infrequently, and that they are most active in some of the harshest months of the year, and you get a fish that many anglers give up on chasing before even putting one in the net.

Most serious musky anglers begin their seasons when water temperatures drop below the high 70s in the fall—generally in October—and continue their hunt through the winter months, ceasing on the cusp of the spawn in late March, when musky generally reduce their feeding activity. Another window of opportunity exists during the post-spawn period, which generally ranges from May to mid-June, before water temperatures reach the upper 70s again for the summer. During the majority of this season, musky will utilize pool habitat in rivers, moving around within those pools following forage, seeking protection from current, and staging near spawning habitat.

Medium-heavy and heavy, fast-action baitcasting rods in the 7'6" to 9' range with matching reels are standard in the musky pursuit, primarily for the heft needed to throw large, heavy lures for long periods of time, but also to aid in setting hooks into the mouth of a large fish and wrestling them to the boat. For the rapidly growing crew of musky fly anglers, 10- to 12-weight rods and large-arbor reels spooled with sinking lines of various sink rates are preferred.

Though most musky anglers would agree that 80-100-pound braided line is the ideal line for musky fishing, there are two polarized schools of thought regarding leaders.

To thwart the musky's arsenal of teeth, some anglers choose to use wire leaders, while others opt for pieces of heavy fluorocarbon or monofilament in the 80- to 100-pound range. Some lures fish better with one option than the other, so you may choose to experiment. Metal snaps, such as those made by Stay-Lock, tied to the end of your leader make changing lures easy.

A vast array of crankbaits, swimbaits, glide baits, jigs, spinnerbaits, and topwater lures populate the market. Imitating suckers and other large baitfish is a great place to start, and classics like the Shallow Invader and Bull Dawg from Musky Innovations and Phantom Lures glide baits have a place in any tackle box. Flies like the Optimus Swine, T-Bone, and Optic Minnow in the 6- to 12-inch range will suit the fly angler.

When choosing lures, consider the fishing situations you'll likely find yourself in, and try to match color schemes, sizes and profiles, and actions to those situations. Musky in warm,



Large lures and heavy rods are the ticket for catching musky.

© Lynda Richardson



Long-nose pliers and other tools are needed when fishing for musky.



DWR fisheries biologists encountered two 50+” musky when sampling the Shenandoah River in 2021.

clear water can often be triggered by fast, flashy lures like spinnerbaits, which exploit the fish's aggressive, reactionary nature, while slightly more lethargic fish in colder water may require a slower presentation with a suspending lure that features the subtle action of a soft plastic curly tail even when sitting still.

The Work's Not Done

A discussion about musky fishing is not complete without mention of what is referred to as a “figure-eight,” a boatside maneuver and lure retrieval technique that aims to capitalize on the musky's curious nature. Musky have a reputation for frustratingly following lures all the way to the boat or bank without striking. By keeping the rod tip low in the water as your lure nears your rod tip, and swinging it in a wide figure-eight or oval path once boatside, the angler has the opportunity to both identify a following fish and tempt it into striking. Depth and speed changes are often key to triggering a strike, and should be a part of every figure-eight after every cast.

The most important consideration when preparing to pursue musky, or any fish, is in procuring the right fish-handling tools. Musky are big fish, so a large net or cradle is necessary in being able to keep them safe and wet when preparing to remove hooks and take quick photos. They also have lots of sharp teeth, necessitating long pliers for hook removal, and making fish-handling gloves a good idea. Jaw spreaders and hook cutters are rarely necessary, but make a huge difference in the amount of harm you may do to a fish that has swallowed hooks deep, or otherwise clamped its jaws shut around a lure, restricting easy access with pliers.

For well over half a century, musky have provided anglers of the Old Dominion a challenging angling experience like no other—and the pursuit is only growing more popular. With more and more emphasis being placed on this all-consuming sport fish, management strategies continue to develop and more science will be conducted, promising a bright future for the fish of 10,000 casts in our home state. ♦

Matt Reilly is a full-time freelance writer, outdoor columnist, and fly fishing guide based in southwest Virginia.

All About Musky

Learn more about muskellunge, including DWR's musky management plan and locations to fish for them, and watch the video “[Musky 101: How to Fish for Musky in Virginia](#),” at: virginiawildlife.gov/wildlife/fish/muskellunge/

When a Hat Isn't Just a Hat



The Virginia Wildlife Grant Program seeks to help connect everyone with the outdoors.



Courtesy of Beyond Boundaries

By Ethan Hunt/DWR

Look, look, look!" the child delightedly yelled as he pulled a bass from a local Richmond pond, his face breaking in a wide smile. The adults helping him applauded, knowing how special this experience was for a child with disabilities. It was an experience he'll remember forever, and one made possible by an unexpected source.

You might be surprised to learn what a differently abled child catching his first bass, a squadron of young women descending on the Shenandoah River armed with new fly fishing kits, and a fleet of first-time kayakers paddling the James River have in common. Interestingly, their experiences have all been made possible by the sale of hats, among other things.

Since 2014 the Virginia Department of Wildlife Resources (DWR), in partnership with the Wildlife Foundation of Virginia (WFV), has used money collected from the sale of DWR

merchandise and other sources to fund the Virginia Wildlife Grant Program. The goal of the grant program is to connect Virginia's diverse communities and youth with the outdoors. The program awards grants to nonprofit organizations, schools and universities, and government agencies with missions that align with the goal of helping underserved groups enjoy outdoor activities. The outdoors are better together, and the grant program aims to include everyone.

"The Virginia Wildlife Grant Program is something that's been able to hook its wagons to bigger things and be cause-driven," said Tom Wilcox, DWR director of engagement and co-creator of the grant program. Between 2014 and 2020, the grant program funded 199 individual programs run by a variety of organizations with a total of more than \$374,550 awarded. The awarded programs range from archery training

Above: A youngster participating in a grant-funded fishing event shows off the largemouth bass he caught.

to fly fishing, sleepaway camps and rock climbing adventures, and almost every outdoor activity in between. For the 2021-22 awards, 23 awardees shared \$184,700 in funding.

An Opportunity for Everyone

"Beyond Boundaries taught us something. They were one of the first, and they said, 'Adventure is for everyone,'" Wilcox said. A nonprofit organization based in Richmond, Virginia, Beyond Boundaries specializes in providing outdoor adventures to individuals with disabilities, veterans, at-risk youth, and members of recovery programs.

Shep Roeper, Beyond Boundaries co-founder, met Wilcox in 2017 and soon after applied for grant funding. "He told me about the grant program, we applied, and we've really just been going hard together ever since," Roeper said.

Beyond Boundaries offers kayaking, hiking, rock climbing, white water rafting, boating, and fishing opportunities. "What we do is really try to create opportunities for outdoor adventure and environmental education for groups that don't have the options," Roeper said. "Getting people to recreate in the outdoors and making sure people have these options is pretty important."

Roeper said a recent event epitomizes the experiences he and Beyond Boundaries try to create. In early summer the

organization hosted a fishing expedition at a local Richmond pond for children with disabilities. Throughout the day the group caught mostly panfish until one boy, who Roeper said was new to the program, hooked a bass. "This bass was probably a good 8 to 10 inches and a pound and a half, but it was a monster fish compared to the bluegill we had been catching," Roeper explained. "And I remember him saying, 'This is why I came fishing today!' He got so excited and FaceTimed his grandad while he was holding the fish. He was like, 'Look, look look!'"

Roeper said experiences like that are why his work is important. "The satisfaction and the sense of accomplishment and the empowerment that they feel by doing something that they've done by themselves like that is pretty impactful; it's pretty cool," Roeper said.

Since the relationship between the grant program and Beyond Boundaries began, Beyond Boundaries has applied for, and received, more money each year. The funds they receive are generated from several places, but

primarily come from merchandise such as hats, shirts, and wildlife guides sold via DWR's online purchasing platform, GoOutdoorsVirginia.com. While sales of hunting and fishing licenses and boat registrations via GoOutdoorsVirginia go to DWR's general fund, merchandise sales funnel into the WVF and are earmarked for the grant program.

"The satisfaction and the sense of accomplishment and the empowerment that they feel by doing something that they've done by themselves like that is pretty impactful." — Shep Roeper



VIRGINIA WILDLIFE GRANT PROGRAM

YOUR PURCHASE SUPPORTS CONNECTING YOUTH TO THE OUTDOORS



+ WILDLIFE FOUNDATION OF VIRGINIA



2022 UPDATE:



23

PROJECTS FUNDED



15,200

YOUTH REACHED*



\$184,700

TOTAL FUNDING

* PROJECTED

For more about the Virginia Wildlife Grant Program, visit: virginiawildlife.gov/virginia-wildlife-grant-program/

Although most of the grant money comes from merchandise sales, there are other sources of revenue. WVF assists DWR in fundraising and collects direct donations from individuals and corporations for the program, while optional roundups on license purchases also contribute to the pool of money available for grants. When it comes to spending money, there are three grant program priorities: instruction, transportation, and equipment.

Women on the Water

Joan Chapman's organization, Shenandoah Reel Women, recently benefited from funding for all three categories. An organization dedicated to providing women and girls an opportunity to try fly fishing, Shenandoah Reel Women has been hosting fly fishing expeditions for women since 2018. "I've been fly fishing for 25 years. I love it," Chapman said. "Every time we went out, though, I was surrounded by testosterone. Which was okay, but at the same time they couldn't relate to questions that I had."

A female friend asking to join Chapman on the river one day is what prompted her to create Shenandoah Reel Women, with the goal of giving women and girls a potentially new way to engage with the outdoors.

One of Chapman's dreams since the program's inception was a sleepaway camp for girls. Help from the grant program helped her finally realize that dream this summer. In late June, the organization hosted a five-day sleepaway camp for girls ages 11-14 at Shenandoah River State Park. "I really wanted to be able to have girls take home the fly fishing rod and reel kits," Chapman said. "Because they get home, they don't have the equipment, their parents can't afford the equipment, and so many live a short bike ride away from the river."

So Chapman applied for grant program funding, which bought the girls rods, reels, a soft case, hard case, backing, line, tippet, fly box, and 20 trout flies. "The first thing they did with my paintbrushes and paint was paint their initials on their rod cases and decorate them any way they wanted," Chapman said. The grant to Shenandoah Reel Women also covered lodging and food for the campers.

Shenandoah Reel Women isn't alone in offering unique outdoor experiences to women; James River Women (JRW) has a similar goal. Founded in 2013, the organization is dedicated to providing an opportunity for women and femme-identifying paddlers to connect in the whitewater paddling community. "There were primarily men out in the community paddling, and it seemed just like a male-dominated sport," said Jen Jimenez, program coordinator. "If you paddle or do any kind of risky sport, there's a difference in how men approach the



Tom Wilcox of DWR (third from left) presents a big check to Beyond Boundaries to notify them of their award.

Courtesy of Beyond Boundaries



A Shenandoah Reel Women participant hooks her first fish on a fly.

Both by Meghan Marchetti/DWR



A Shenandoah Reel Women instructor shares a laugh with a participant.



Grant recipient James River Women provides opportunities for women and femme-identifying paddlers to experience the whitewater paddling community.

"It was eye-opening to see that there was such a huge need for something like this." — Jen Jimenez



The Virginia Wildlife Grant Program helped provide equipment for James River Women participants to get on the water.

sport versus how women approach the sport." Until recently, JRW was a club where women who already had equipment could meet to paddle together. Then, in fall 2021, Wilcox reached out.

"He messaged our Instagram page and just said, 'Hey I'm Tom Wilcox with DWR, just wondering if you guys have ever applied for a grant or anything like that; give me a call,'" Jimenez said.

Before JRW could apply for grant funding, however, they had to have nonprofit status, which the organization achieved through an umbrella organization, James River Outdoor Coalition (JROC), a nonprofit group whose mission is to improve access within the James River Park System. "We found out in the late

winter that we had been approved for the grant, and now we're able to provide gear to people that don't have it," Jimenez said. With the help of the grant program, JRW purchased boats, paddles, spray skirts, and personal flotation devices that they now offer to women joining paddles down the James. Jimenez said it's allowed them to grow the organization.

"It was eye-opening to see that there was a huge need for something like this," she said. "To just come out and share an experience with everybody and have it not be run by just men and be a legacy sport."

The grant program recently expanded its grant offers to Virginia's colleges and universities with the goal of continuing to provide assistance to underserved communities. Donations, fundraising events, roundups, and merchandise will continue to fund programs receiving grants as the program grows.

"Back in 2001, when we sold a hat, a hat was a hat," Wilcox said. "In 2022, when we sell a hat, it's never just a hat." ☀

Ethan Hunt studies Journalism at Appalachian State University and freelance writes following an internship with Virginia Wildlife magazine.



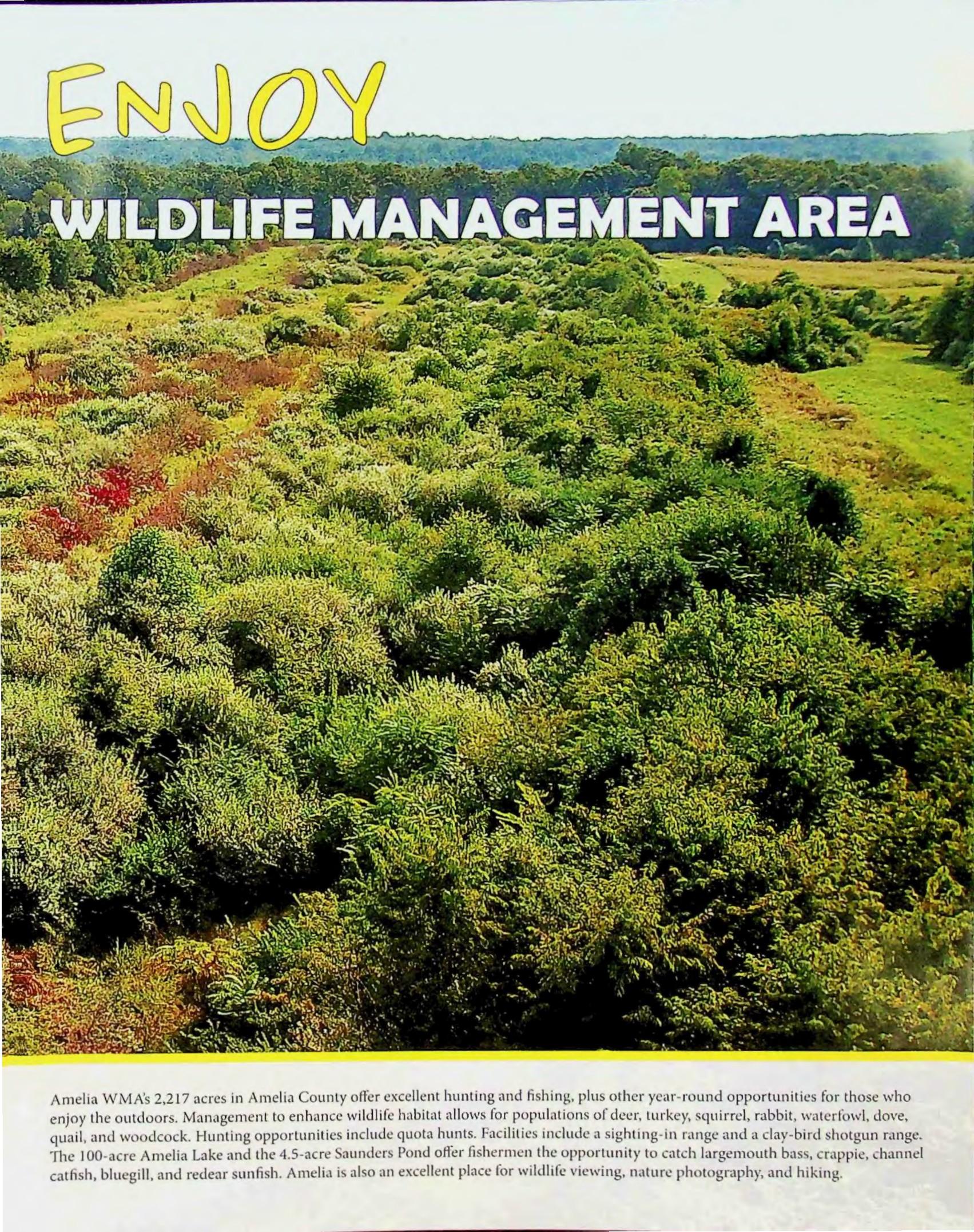
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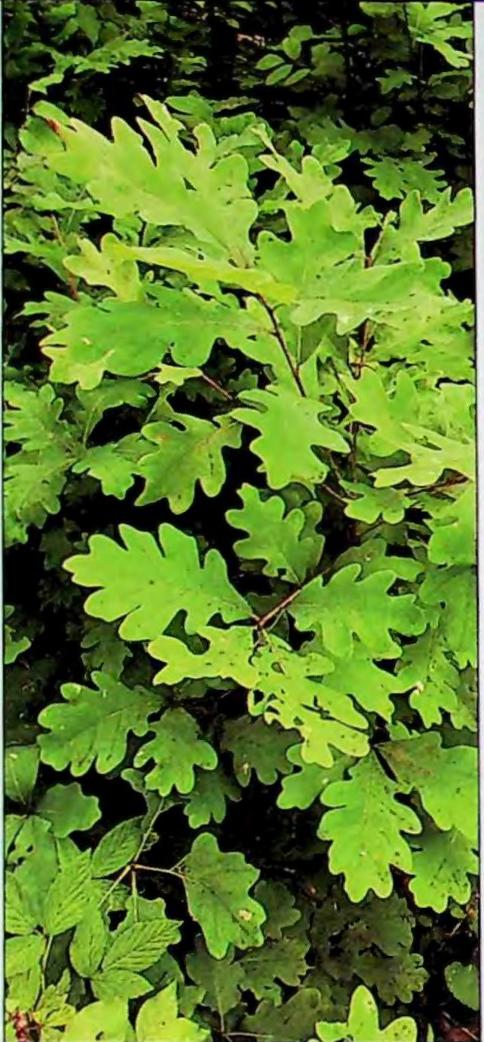
The Virginia Department of Wildlife Resources maintains 46 Wildlife Management Areas (WMA) totaling more than 215,000 acres for a variety of outdoor recreational opportunities. To access a WMA, you'll need a DWR Restore the Wild membership or a Virginia hunting license, freshwater fishing license, boat registration, or access permit. For more information on WMAs: www.virginiawildlife.gov/wma.

Photo by Ron Messina/DWR

ENJOY WILDLIFE MANAGEMENT AREA



Amelia WMA's 2,217 acres in Amelia County offer excellent hunting and fishing, plus other year-round opportunities for those who enjoy the outdoors. Management to enhance wildlife habitat allows for populations of deer, turkey, squirrel, rabbit, waterfowl, dove, quail, and woodcock. Hunting opportunities include quota hunts. Facilities include a sighting-in range and a clay-bird shotgun range. The 100-acre Amelia Lake and the 4.5-acre Saunders Pond offer fishermen the opportunity to catch largemouth bass, crappie, channel catfish, bluegill, and redear sunfish. Amelia is also an excellent place for wildlife viewing, nature photography, and hiking.



MANAGING HARDWOODS FOR WILDLIFE ON WMAS

TIMBER HARVESTING ON WILDLIFE MANAGEMENT AREAS IS AN ESSENTIAL TOOL FOR
WILDLIFE HABITAT MANAGEMENT FOR MANY REASONS.

By Justin Folks/DWR

It may seem counterintuitive that harvesting trees can be a good thing for wildlife, and understandably so. Throughout my time in grade school, much time was spent in science classes learning about the rapid loss of the Amazon rainforest and the species that call it home. It was engrained in our minds that cutting trees was bad; the Lorax even told us so.

The Amazon rainforest is warm and wet every day. All of the plant and animal species thriving there have adapted to its relatively consistent environmental conditions, so any sort of change can alter the system in a negative way; and what we were really learning about in these elementary classes was the deforestation taking place in the Amazon. These forests weren't

being managed—they were being cleared and converted to other land uses like farms and communities.

Virginia is not the same as the Amazon, for many reasons. Here, environmental conditions are always changing—changing seasons, dry years, wet years, hurricanes, tornadoes, ice storms, high wind events, fire, etc.—and all of these factors are natural and cause disturbance. As such, most of Virginia's wildlife species have adapted to disturbance, and many of Virginia's Species of Greatest Conservation Need (SGCN) identified in Virginia's Wildlife Action Plan (bewildvirginia.org), depend upon habitats that are created or maintained by periodic disturbance.

Above left: Heavily thinned habitat, above middle: young white oaks compete with other vegetation for sunlight and nutrients, above right: clear cutting is one of many types of forest management geared to wildlife.

Generally, when a forest is disturbed, the amount of sunlight that reaches the forest floor increases. As sunlight increases, the abundance and diversity of plants also increase, especially herbaceous (non-woody) plants like grasses and forbs (wildflowers), as well as shrubs.

A large majority of the lands that make up the Virginia Department of Wildlife Resources' (DWR) Wildlife Management Areas (WMAs) is forested (especially in the western part of the state), so our main method of habitat management is active forest management. We utilize a variety of techniques to manage forest habitats, including prescribed fire, various timber harvesting strategies (such as thinning, clearcutting, and others), often in combination, to promote habitat for game and non-game species, improve forest health, and promote forest regeneration. By harvesting timber, we can mimic natural disturbances on our own terms, create diverse habitats, help local economies, help generate forest products, and acquire funds that can be put back into wildlife conservation. All of these activities are forest management, not deforestation.

Improving Habitat, Diversity, and Resiliency

Wildlife habitat is species-specific; in other words, each species has its own habitat. What may be good for one species may not be good for others. While there are wildlife species that do prefer mature forests with closed canopies, many depend upon young forests, woodlands, and forest openings created by natural disturbances or through prescribed timber harvests. These habitat types offer food and cover for many game and non-game species.

Plants need soil, moisture, and sunlight to grow. As sunlight increases, plant diversity increases. As plant diversity increases, wildlife diversity increases. Maintaining a mix of forest openings such as young forest, mature forest, and mixed-age forest stands helps ensure there is habitat for a wider variety of wildlife species. Another important thing to note is that there are many wildlife species that will utilize each of those habitat types at some point in their life cycle or during a single year. While acorns are highly valuable to many species, they're only available about three months out of the year. Those critters

What may be good for one species
may not be good for others.
Put simply,
we manage our forests
for wildlife and for forest health.

need food (and cover) the other nine months, which is most often provided by managed timber stands.

Wildlife species that need young forests include ruffed grouse, American woodcock, rabbits, fledgling songbirds, and more. As Lisa Williams with the Pennsylvania Game Commission put it, "Baby trees need hugs, too." For more information on the benefits of young forests, visit youngforest.org.

Diverse forests are also resilient to environmental changes, disease, drought, pests, and other stressors, as there is a wider variety of species and age classes to withstand change and provide habitat and ecosystem services. Imagine having an entire forest stand comprised of a single tree species. If there's a disease, pest outbreak, or new climate condition that negatively affects that species, what will be left?

Regenerating Forests for the Future

Trees don't live forever, and with mast-producing species like oaks and hickories, nut production tends to decline as the individual tree ages. Periodically harvesting trees across a forest stand means there will be trees of different ages and stages of productivity. As some trees age and decline in productivity, there will be more productive ones to replace them in the coming years.

Oaks are incredibly important to many of Virginia's wildlife species because of their acorns. While much of our hardwood forests are currently comprised of oak, they are mostly at an age where productivity is declining, and there are few oak



Ruffed grouse are one of many species that need young forests to thrive.

Lynda Richardson/DWR



Unmanaged hardwood forest stands usually resemble the one pictured here. With almost zero sunlight hitting the forest floor, these habitats provide no food or cover. Controlled burns (inset) are one method of forest and habitat management.



seedlings on the landscape that will replace those mature oaks one day. In other words, we're losing oaks that likely won't be replaced.

Young oaks are finicky about sunlight. They need enough to grow, but too much sunlight allows other species of trees that grow more quickly (like red maple, black birch, and tulip poplar) to outcompete them. Prescribed timber harvests can manipulate the amount of sunlight reaching the forest floor to give the competitive advantage to the oak seedlings. Regenerating oak has been very difficult in recent decades for many reasons, but we're learning that certain timber harvest prescriptions and prescribed fire are both essential tools (in addition to deer herd management) to help get the job done.

Protecting Natural Resources

Gone are the days of clearcutting entire mountainsides and creating logging roads up steep slopes. For every timber harvest, loggers must follow Best Management Practices (BMPs) to prevent soil erosion and maintain water quality.

These BMPs include limiting the number of haul roads to those that are absolutely necessary, laying out haul roads along the contour of a slope (rather than with the slope), creating water bars when there is a slope, seeding roads and log landings with quick-establishing vegetation to prevent erosion after the timber harvest is complete, and maintaining Streamside Management Zones (SMZs) which are buffers around perennial streams where logging activity is very limited to prevent sedimentation in the streams, maintain shade to keep the water cool, and help maintain habitat for aquatic invertebrates that hide in or feed on submerged leaf litter and the fish.



This site was harvested using the "expanding gap" technique. This technique initially creates canopy gaps while the middle of these gaps receive full sunlight and are lush with grasses and wildflowers within a few years.



Shelterwood harvest aims at regenerating oaks by thinning the stand to provide the right amount of sunlight to oak seedlings on the forest floor.

DWR is also certified through the Sustainable Forestry Initiative (SFI), which sets high standards for natural resource conservation and sustainable forest management for land-managing organizations. For more information on SFI, visit forests.org.

Forest Management, NOT Deforestation

Virginia does experience some deforestation on private lands, but not on our WMAs. When





With the forest stand thinned, the residual oak trees have less competition for sunlight and nutrients and are able to grow bigger and faster and produce more acorns.

we manage forest lands, it remains a forest. We do not convert forest land to agriculture or housing developments. Put simply, we manage our forests for wildlife and for forest health.

While DWR does gain some income from harvesting timber, we commonly leave some of the most economically valuable trees standing in a harvest area because they are the most valuable to our wildlife and our forest stands. We leave trees that would make a sawmill owner



This site was heavily thinned to promote habitat for the ground-nesting golden-winged warblers (inset) a Species of Greatest Conservation Need in the DWR Wildlife Action Plan.



Shutterstock

The same site at the beginning of a third growing season. Nothing was planted here—in just a few short years, Nature provided an abundance of food and cover for countless wildlife species.

drool, and leave wild grape arbors that might make some foresters shake their head. Within many of our harvests, we also leave snags (standing dead trees) and sometimes create snags for the benefit of cavity nesters, woodpeckers, flying squirrels, bats, and more.

Still, there are some circumstances where the best thing for a forest stand is to harvest every tree (a “clearcut” or “cut-over”) and start from scratch. Even when a stand is clearcut, it is still a forest (just a very young forest). Clearcuts obviously have limited standing vegetation immediately after harvest, but within three to five years, the forest floor erupts with lush, diverse vegetation (that’s been waiting in the seedbank for such an opportunity), and the species that thrive upon those young forests do well in that habitat. Although clearcut stands are valuable to many of our wildlife species, we still limit the size of these types of cuts to help maintain diversity across our WMAs. Another thing to keep in mind is that not all of our lands are accessible to loggers—an area may be too steep, rocky, wet, etc.—so by default, there will always be areas of mature trees left in our forests.

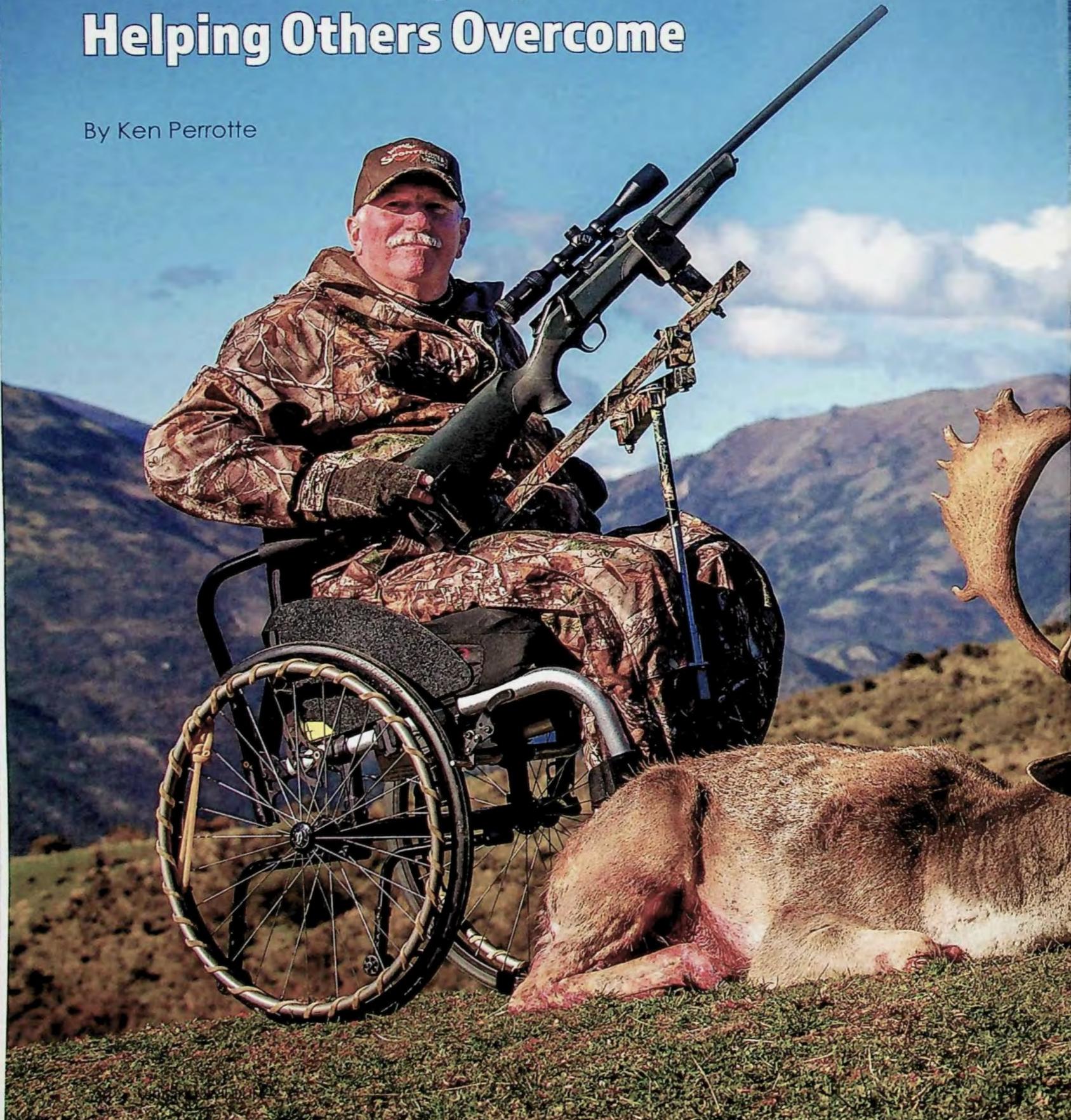
So the next time you visit one of our WMAs and notice some logging activity, be sure to re-visit the area in a few years to compare it to what it was when you first saw it as well as the surrounding areas that haven’t been “touched” recently. Take your camera or binoculars, because you’re bound to see some incredible plants and wildlife in those sites. ↗

Justin Folks, DWR Region 4 district wildlife biologist, is from Staunton, Virginia, and implements many successful habitat management practices on his family’s hunting property in Highland County. Some of the photos in this article were taken of those projects.

ROBIN CLARK

Will Leave a Legacy of Helping Others Overcome

By Ken Perrotte





The avid hunter and angler has worked for decades to make the outdoors accessible for all.

Every shooting position in September dove fields at Virginia Wheelin' Sportsmen events holds a story—some tragic, some heartbreaking, all uplifting. The people behind these stories are survivors, individuals who overcame often horrific accidents or debilitating medical conditions resulting in physical impairment but are now engaged in outdoor pursuits.

Robin Clark, the man coordinating these hunts for the past 20 years, is an ambassador to all who want to experience the outdoors on their own terms while coping with life-changing injuries and conditions. He brings a distinct empathy for the men, women, and youngsters heading afield.

Clark's life changed dramatically in June 1972. The 16-year-old was cutting hay on his family's farm when he and a 12-year-old neighbor decided to take a cooling, lunch break dip in the farm's pond.

With his friend Darryl first in the water, Robin sprinted the length of the dock, dove in, and hit bottom, immediately breaking his neck. Unable to move his arms or legs, he thrashed his head trying to reach the surface of the water. Unsuccessful, and unable to hold his breath any longer, he figured his life was over and inhaled his last breath of water.

Darryl became alarmed when Clark didn't surface. He walked to the spot where Clark dove in, eventually stepping on his friend, who was face-down on the bottom. Panicked, Darryl dragged Clark's blue, seemingly lifeless body to a nearby island and ran for help. The local rescue squad was summoned. Another call was placed to a nearby store. Fortunately, the store owner's son was walking in as the phone rang. He immediately rushed to the pond, administering cardio-pulmonary resuscitation

techniques learned in the military. Clark regained consciousness just as paramedics arrived.

Clark was transported to the University of Virginia Hospital. After five days in intensive care, his condition stabilized and he began a 2 ½-month inpatient stay before transitioning to the Wilson Workforce and Rehabilitation Center (WWRC) to continue his lengthy, difficult recovery as a quadriplegic, paralyzed below his mid-chest. With limited use of his arms and hands, he uses a powered wheelchair for mobility.

Clark avidly hunted with family and friends as a boy. Resuming such pursuits took nearly 10 long years of often painful recovery. Resources and information—there was no internet then—were limited as Clark sought assistive devices that could help him hold a firearm or pull the trigger.

"I had to create my own adaptive equipment," Clark said. "I couldn't return to the sport I loved if I couldn't safely and accurately shoot. With the help of friends, we finally figured out how to accomplish that."

Along with one friend, an amateur gunsmith, they adjusted the trigger pull on his old Remington model 721 .270 deer rifle, enabling Clark to shoot safely and accurately. They next designed a wooden rest to sit on the window of Clark's van. He used a permit that allowed disabled hunters to hunt from their vehicle.

"I harvested two deer that first year back hunting and will never forget that feeling of accomplishment, a return to 'normalcy,'" Clark said.

His next projects included a wheelchair-mounted gun rest and a simple, lightweight gun rest to help quadriplegic and paraplegic hunters shoot safely and accurately.

Robin Clark poses with a fallow deer that he harvested in the alpine region of New Zealand.

Courtesy of Dallas Hemeyer

Supporting Others

"In the mid-'90s, I learned about a Buckmasters program for disabled sportsmen," Clark said. "I became a member and eventually a friend of the director, David Sullivan. He asked if I'd assist with a couple hunt opportunities he'd been offered in Virginia. I met with a landowner and hunt club, helped them set up their first hunts, and coordinated with selected hunters."

Clark quickly saw how grateful the hunters were for having the chance to visit quality properties, and the reciprocal enjoyment the hosts and volunteers received. The seed was planted.

"Shortly after my involvement with Buckmasters," Clark said, "I learned of a new National Wild Turkey Federation (NWTF) program, the Wheelin' Sportsmen. I began as a participant in 2001, then was asked to lead the program as the State Coordinator within a year. The first year of the program we had two hunts."

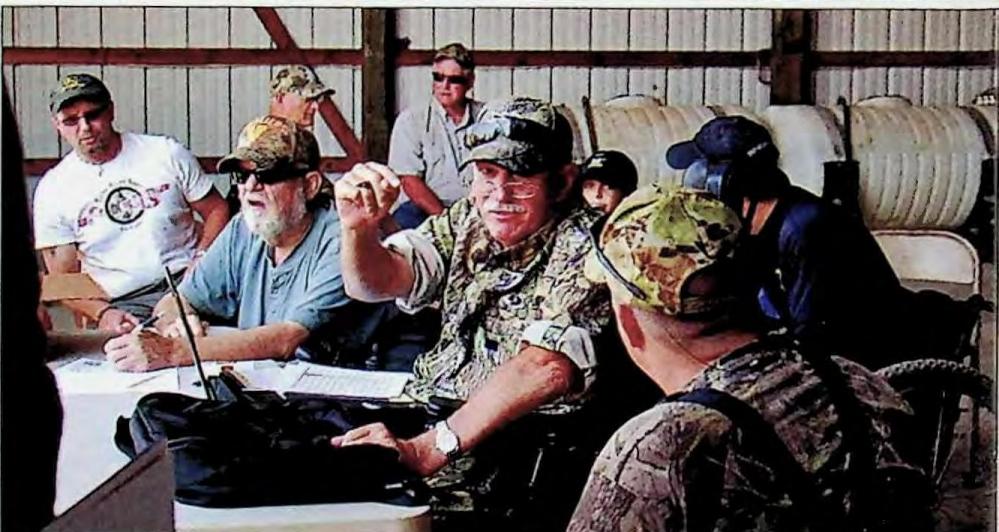
As word spread about these special hunts, support grew among landowners and hosts wanting to create opportunities. A big challenge was finding participants able to participate.

"I recognized that as a major issue, so I immediately began developing a database of mobility-impaired sportsmen that has grown to almost 400," Clark said. "Our program has grown to more than 50 events statewide annually, including 30-plus deer, turkey, dove, and waterfowl hunts, plus freshwater and saltwater fishing events. We've had participants as young as 7, all the way to a few in their 90s."

Managing such a program requires expertise in networking and cultivating relationships. In 2004, working with the Central Virginia Chapter of NWTF, Clark put together the Wheelin' Sportsmen's first turkey hunt in Virginia. The following year, he worked with officials with the (then) Virginia Department of Game and Inland Fisheries and the Virginia Department of Forestry (DOF) to host a similar hunt at the New Kent Forestry Center in Providence Forge.



©Ken Perrotte



Courtesy of Robin Clark



Courtesy of Robin Clark

Top: Participants line up to sign in for a Warsaw dove hunt. Middle: Robin Clark, center, talks with participants of the Sabine Hall dove hunt. Bottom: Robin Clark, middle right, goes over safety issues before a Bass Pro Shops disabled youth deer hunt.

Forestry officials were so impressed with the success and professionalism exhibited at the hunt they invited the group back that fall for a first muzzleloader hunt on DOF property. Both hunts have grown in scope since, with hunts added at other DOF properties.

In early 2006, Clark approached the Virginia Department of Conservation and Recreation (DCR) to discuss the possibility of hosting deer management hunts for disabled hunters on state parks. The first such hunt took place that fall at Shenandoah River State Park, with later expansion to Lake Anna and Staunton River State Parks.

Clark also worked to create new hunting and fishing opportunities at WWRC, the Frontier Culture Museum, Western State Hospital, and several county parks.

As relationships expanded, opportunities flourished. "What started as one deer hunt with a private landowner in Warsaw years ago has resulted in several deer and dove hunts in that area," he said. "It also opened the door for us to partner with the U.S. Fish and Wildlife Service's Rappahannock River Valley National Wildlife Refuge to create new hunting opportunities on their properties."

He notes that the Virginia Department of Wildlife Resources (DWR) Conservation Police Officers have been tremendous supporters, especially at the Northern Neck events.

Enduring partnerships with conservation organizations such as Ducks Unlimited, Delta Waterfowl, Waterfowl USA, Virginia Waterfowlers Association, the Virginia Deer Hunters Association, and more created additional opportunities. Support and recreational programs grew immeasurably over the last 20 years, especially since the 9/11 attacks. Clark saw tremendous growth in opportunities for wounded warriors, especially those serving in Iraq and Afghanistan.

"Surprisingly," he said, "the veteran group that was being underserved were the older disabled vets, those injured prior to 9/11, such as the Gulf War and Vietnam or even Korean War veterans. Most disabled vets who participate with our program come from this category. We have a 94-year-old vet who still hunts with us!"

Wheelin' Sportsmen events are open to anyone with a mobility impairment—individuals who can't hunt, fish, or shoot without assistance. While disabled veterans deservedly receive considerable attention, Clark wants to ensure opportunity knocks for all, attending multiple outdoors shows annually to spread the word about experiencing the outdoors as rehabilitative

NWTF Volunteer of the Year in 2005, inducted into the Virginia Conservation Hall of Fame in 2007 and, in 2008, honored at the NWTF National Convention as Wheelin' Sportsmen National Volunteer of the Year.

Clark calls the broad support extended by NWTF Chapters throughout Virginia "crucial" to the overall success of the Wheelin' Sportsmen.

"They have supported our program since day one and brought the exposure needed to expand our program outside of the NWTF," Clark said. "We have developed so many amazing partnerships with landowners, hunt clubs, civic organizations, and local governments. We've had so many folks stop at our booth at outdoor shows, or call wanting to offer up a hunting or fishing opportunity."

Jeff Hoke of Waynesboro, president of Virginia Wheelin' Sportsmen, wholly credits Clark with Virginia's success. "Robin is known all over the country and has built the largest Wheelin' chapter in the USA!" Hoke said.

"It's incredible and a testament to his hard work. He has total dedication to the chapter."

Ray "Bear" Davidson, a leader with NWTF's Virginia's Piedmont Area Chapter and a recent addition to NWTF's national board of directors, calls Clark a "fantastic mentor and friend."

"Virginia Wheelin' Sportsmen is the best in the country simply because of how much effort Robin puts into the program," Davidson said. "But that's nothing new; he's had the same passion for the NWTF's mission for the last two decades from his volunteer days, to his state leadership days as the vice president and president. He is a pivotal part of the Virginia NWTF and its history."

Time has a way of catching up to everyone, even a dynamo like Clark.

"Last June, I celebrated the 50th anniversary of my life-changing diving

"I wanted to be sure our program reached individuals that had no opportunities." —Robin Clark

therapy and a way to escape isolation and share time with others who are also working to overcome challenges, many unforeseen and seemingly unfair.

"I wanted to be sure our program reached individuals that had no opportunities—the 23-year-old self-employed painter who fell from a ladder, broke his back and suddenly finds himself using a wheelchair for the rest of his life," Clark said. "No insurance, riddled with medical bills and living in his mom's basement. He's the type of person I want to find and get out with us. Provide something he can accomplish to give him hope."

The "Paycheck"

Clark's work isn't confined to Wheelin' Sportsmen. He served as NWTF Virginia's vice-president from 2007-2008, then as president for two terms, from 2009-2012. He was the Virginia State Chapter



Top: Robin Clark (right) and Lance Hanger of Parker Bows get ready for turkey during a 2016 DWR OneShot event. Below: Robin Clark (left) shares a moment with Blake Rush after Clark presented him with a new rifle.

accident," Clark said. "It was impossible to imagine what life would bring as I laid in the hospital bed in 1972, barely able to even move my arms. Fortunately, I had supportive family, friends and a community that helped me live an active, 'normal' life. Not everyone who suffers a spinal cord injury has that support."

In addition to all his volunteer work, Clark worked at Charlottesville's

Crutchfield Corporation for 25 years, serving in a variety of positions, among them web sales and product reviews. Prior to that, he worked with a transportation company as an operations supervisor. He has served as a volunteer mentor for newly injured spinal cord patients since college and he plans on continuing to help wherever and however he can. His success in building and leading the Wheelin' Sportsmen

program over the last 20 years, though, is making it tough to fill his own shoes—the hours and the miles adding up.

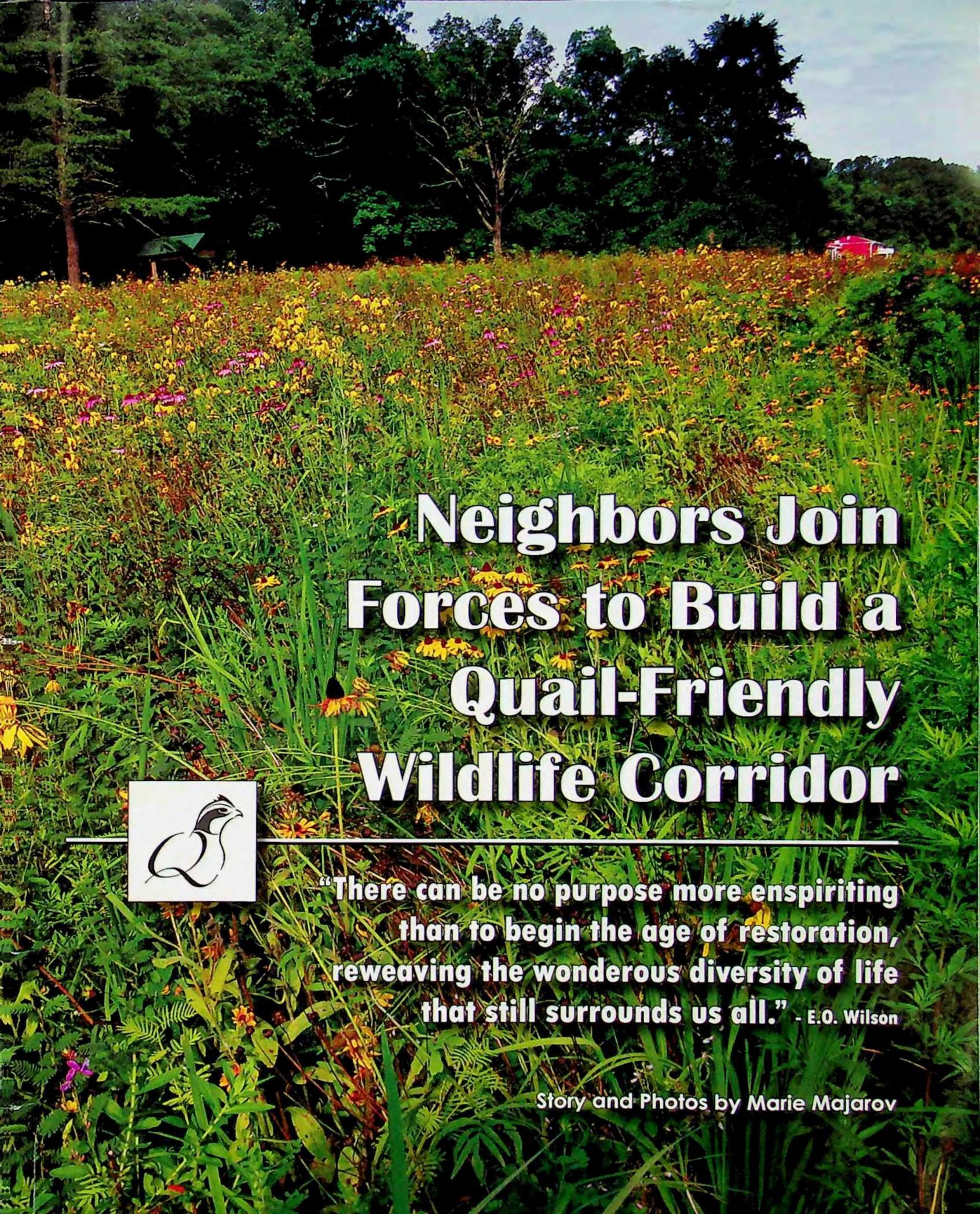
"It's almost a full-time job organizing and coordinating participants for 50-plus events each year. I can't do this forever," he said. "Over the last two years I've recruited Hunt Coordinators from our ranks to assist in event management. We'll work to have these Hunt Coordinators manage events regionally across the Commonwealth to share the responsibility."

This year, Clark was one of five Roger M. Latham Sportsman Wild Turkey Service Award recipients at the 46th annual NWTF Convention and Sport Show in Nashville. "Robin has an extensive resume of compassion and volunteerism," NWTF CEO Becky Humphries said. "The effects of decades of dedication to the NWTF and serving as an integral leader for our outreach events has put him in a class of his own."

"It was an honor to be recognized for this prestigious award, but that's not why I do what I do," Clark explained. "This is a volunteer position, but I get my paycheck every time I see a participant harvest their first deer, dove, goose, or turkey, or catch their first trout since their accident. Or a parent, sibling, or spouse thank me for giving their loved one hope and an opportunity to get outdoors. Or the volunteer that comes to me after a hunt and says they had no idea how much helping would mean to them."

Even as he reluctantly begins delegating some Wheelin' Sportsmen duties, Clark's enduring impact will reverberate every time specialized vans carrying these amazing sportsmen and women pull up for an outdoors experience. Each person will have the opportunity to feel that excitement common to all who venture afield, their human spirit fueled by perseverance and hope and one man's legacy of selfless dedication. ♦

Ken Perrotte, a King George resident, is outdoors columnist for the Fredericksburg Free Lance-Star newspaper and a regular contributor to multiple national magazines. Follow him on his webpage: outdoorsrambler.com.



Neighbors Join Forces to Build a Quail-Friendly Wildlife Corridor



"There can be no purpose more enspiriting than to begin the age of restoration, reweaving the wonderous diversity of life that still surrounds us all." - E.O. Wilson

Story and Photos by Marie Majarov



Early in the process of invasive removal and herbaceous treatment..



June 2021 seed planting in carefully prepared soil.

A group of landowners and neighbors in rural northwestern Frederick County dearly missed the once-frequent “bob-WHITE” whistle and coveys of northern bobwhite, our native Virginia quail (*Colinus virginianus*), that once scurried across their fields. Deeply aware that our Commonwealth’s quail population has suffered a steep decline, they knew that few young people had ever heard their distinctive spring call or the thunderous sound of a large covey erupting from a field edge in a fall hunt.

They were also keenly cognizant that robust, well-situated fields of quail-friendly habitat are critical for an entire suite of pollinator, bird, and mammal species, of which many, especially pollinators, are also experiencing a precipitous drop in population numbers. With their individual properties protected by conservation easements, they decided it was time to act. And indeed, they have acted, creating an extraordinary corridor of native warm-season grasses and wildflowers spanning their adjoining properties.

This diverse group of friends and neighbors, who collectively own 600-plus acres, embarked on the project three years ago. A retired federal wildlife enforcement officer—an avid hunter and conservationist who was a driving force to have these properties enrolled under conservation easement and a major source of inspiration for this restoration project—joined

forces with an artist who creates exquisite nature-inspired metal sculptures along with her sister, a retired teacher, and retiree brother-in-law who were all interested in encouraging pollinators and returning quail to enrich their family farmland. A farmer, entrepreneur, and lifelong outdoor enthusiast and his physician wife joined in with the goal of creating a nature preserve on their verdant property.

Creating a Plan

The Virginia Quail Recovery Initiative (QRI), with their Private Lands Wildlife Biologists, provided a starting point for them. A partnership begun in 2009 between the Virginia Department of Wildlife Resources (DWR), the Conservation Management Institute at Virginia Tech and the U.S. Department of Agriculture’s Natural Resources Conservation Service (NRCS), QRI’s mission is to restore northern bobwhite quail populations to their native range in the commonwealth and educate the public on the importance of quality early successional habitat for bobwhites, pollinators, and other wildlife species—just what these neighbors were envisioning. QRI also provides technical assistance to landowners to create and maintain this critical habitat for the benefit of wildlife. They can also help landowners enroll in federal habitat incentives programs if they desire assistance with costs.

Previous page: Only 13 months after preparing and planting, this field turned into a beautiful wildlife meadow.



Nurse oats and flower seedlings break surface mid-June 2021.

Quail populations in our commonwealth, as in most of their U.S. range, are estimated by DWR to be down by over 80 percent since the mid '60s, though there are some portions of the state where modest recoveries seem to be underway. These birds require habitat with good forage, ground-nesting, brood-rearing, and escape options, along with winter protection and appropriate cover and water sources, preferably in corridors.

Unlike isolated stands of habitat, corridors link areas providing safe access to a variety of resources, and over time will significantly increase species biodiversity. These elements were key points considered in the neighbors' plan.

In August 2019, Justin Folks, then a QRI Private Lands Wildlife Biologist and now a DWR District Wildlife Biologist who continues his interest in this project, met with the neighbors, listened to what they envisioned, and assessed their properties. Together they drew up a detailed step-by-step approach for implementing a well-informed wildlife corridor concept.

To secure the best outcome their project could achieve, the neighbors thoughtfully identified 20 acres spanning almost 2 miles, weaving over, around, and through their adjacent properties. Layout maximized the amount of woodland edge, sheltering, breeding, and nesting opportunities and paralleled a vibrant, healthy stream and streambank areas.

Preparing the Land

Once the comprehensive plan was finalized, Folks facilitated the process for securing financial and further technical assistance with NRCS—assistance that, importantly, is regularly available to farmers “so they may voluntarily put conservation on the ground, benefiting both the environment and agriculture operations,” according to NRCS literature. Brent Barriteau, NRCS District Conservationist for the Frederick County area, joined Folks in supervising the project during the step-by-step process of preparation, planting, and seed growth and will be prescribing corridor maintenance as needed.

Preparing their designated fields for planting was an extensive job, and an indispensable one. Beginning in 2019, all woodland edges were cleared of invasives (ex. autumn olive, tree of heaven). Wildlife-friendly brush piles were built and soon became a winter haven for birds. Extensive, carefully formulated brush management and herbaceous weed treatment, detailed and overseen by NRCS, was employed. A winter wheat cover crop was planted to protect the pre-planting work from soil erosion and weed encroachment during the 2020-21 winter. Soil preparation included disking, re-disking, and more re-disking fields throughout the process and finally cultipacking to crush dirt clods and remove air pockets to form the smooth, firm seedbed needed for successful planting.

Above: Wildflowers wind for almost 2 miles along a mowed hay field to a brush-piled hedgerow, and a fully planted 2-acre field.



A spicebush swallowtail on lemon mint.



An excellent pollinator, the hover or flower fly, visits one of many species of coreopsis growing in the habitat.



Lemon mint, left, and yarrow on the right

This project is “unique,” Barriteau explained, “because it is a group of landowner/neighbors willing to work together across their connected properties.” The neighbors strongly believed that too much time, sweat equity, and money was involved in the project not to do it correctly. They understood the importance of corridors and that a successful outcome would require strong control of competitive weeds and invasive brush, properly prepared soil for good seed-to-soil contact, and not planting seeds too deep.

Following 21 months of thorough preparation, planting day arrived in June 2021. A seed mix—recommended by Folks and containing native warm-season grasses, little bluestem and Indiangrass, and native, perennial, pollinator-friendly wildflowers including coreopsis, yarrow, blackeyed Susans, monarda, coneflowers, partridge peas, bidens, and asters—was planted along with a companion planting of annual oats. These oats served as a critically important “nurse crop” to reduce the incidence of weeds, prevent soil erosion, and shelter the young seedlings during the first year of growth. Within two weeks, the oats were well up and little wildflower seedlings were breaking the surface.

“I had great confidence following my initial meeting with these neighbors that the native grass and flower establishment would go well,” said Bariteau. “My expectations were exceeded

at my mid-July 2021 visit. The wildflowers and companion oats were easily identified across all establishment acres, and it was abundantly clear that meticulous site preparation was the reason for success.”

New Growth

Early on the morning of July 20, 2021, a series of texts and cheers flew between the neighbors: the small partridge pea plants were blooming and being visited by bees! It was a welcome harbinger of an excellent outcome. Fall yielded showy, knee-high, sunny yellow and brilliant red blooms of coreopsis, partridge peas and bidens, young bright lavender-colored asters and white yarrow all intermingled amongst the nurse oats. After a peaceful winter with birds enjoying nutritious seed-heads, spring 2022 brought a spectacular explosion of green growth. In July 2022, just one year after planting, the corridor was clad in thick, waist-high and taller resplendent blossoms and grasses. The neighbors enjoy daily walks along their corridor, keeping their eye on each new species to bloom—red and yellow coreopsis, brown-eyed Susans, yellow coneflowers, creamy white yarrow in huge clusters waving in the breeze with pink echinacea and lemon mint blossoms poking their heads in the sea of yellow, red, and white.

Flocks of goldfinches regularly rise from the fields, joining

Above: In late June 2022, yarrow, coreopsis, and black-eyed Susan continued to be spectacular!



One of many insects enjoying the new meadow are dragonflies.



Black-eyed Susans flourish in the meadow.

wild turkeys, a profusion of pollinators constantly foraging, abundant bee species, butterflies, and hover flies. Purple asters bloomed soon after, and warm-season grass developed into clumps. Cover, connections to the nearby stream and wooded areas, and nesting opportunities are truly ideal for many species—of course the neighbors are hoping for quail, and with good reason.

It's an auspicious start to the corridor project to be sure, but the corridor will require some ongoing maintenance to continue thriving. Keeping paths clear around the planting will limit weed encroachment. Spot-treating, if needed, will be done to handle any invasive species, such as those from bird-dispersed seeds (ex. crown vetch) and in time there could be mowing and prescribed burning. NRCS will follow this planting and advise accordingly. Hopefully, in the future, these landowners will hear the calls of bob-white quail echoing again.

Yes, habitat restoration can be successful! These neighbors have provided us with a model that is inspirational and one to emulate. As Margaret Mead notes: "Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it's the only thing that ever has."

Folks noted that for wildlife professionals, "landowners and projects such as these are what keep us motivated to

continue this important work. Their passion and dedication are contagious. We hope that more landowner/cooperators will follow suit. Successful large-scale habitat restoration truly is a community effort."

Marie Majarov (www.majarov.com), is a Virginia Master Naturalist and Habitat Partners®-trained pollinator habitat educator. She lives on a lovely old woodland edge in Winchester, Virginia, with her husband Milan, where they are active with a large pollinator garden, the Virginia Outdoor Writers Association, and the Virginia Native Plant Society.

Quail Habitat Resources For Landowners

- Bobwhite Quail in Virginia: virginiawildlife.gov/quail/
- Natural Resources Conservation Service, United States Department of Agriculture: nrcs.usda.gov/wps/portal/nrcs/site/va/home/
- Private Land Biologists & Habitat Assistance Programs: virginiawildlife.gov/quail/get-involved/
- Virginia Quail Recovery Initiative: cmi.vt.edu/Projects/ProgramSupport/VirginiaQuailRestorationInitiative.html

Working for Wildlife

By Molly Kirk/DWR

The mission statement of the Department of Wildlife Resources (DWR) reads that we seek to conserve, connect, and protect: **Conserve** and manage wildlife populations and habitat for the benefit of present and future generations. **Connect** people to Virginia's outdoors through boating, education, fishing, hunting, trapping, wildlife viewing, and other wildlife-related activities. **Protect** people and property by promoting safe outdoor experiences and managing human-wildlife conflicts. Here are a few of the many accomplishments of DWR staff in working toward those goals...

Historic Mussel Species Releases

Meaghan Marchetti/DWR



During August and September, DWR made two historic releases of endangered mussel species into Virginia rivers. Biologists have been working toward propagating and releasing these two mussel species for decades. Improving water quality in the James and Clinch rivers made the releases of these species possible, and DWR biologists hope that reproducing native populations of both species will develop from these released individuals.

In central Virginia, DWR and the U.S. Fish and Wildlife Services (USFWS) released 2,000 of the James spiny-mussel propagated and raised at the Virginia Fisheries and Aquatic Wildlife Center, a cooperative freshwater mussel hatchery at Harrison Lake National Fish Hatchery operated by DWR and U.S. Fish and Wildlife Services (USFWS) in Charles City, into the main stem of the James River. James spiny-mussel hasn't been found in the James River for more than 50 years.

"It's believed to have been lost over about 90 percent of its historic range, including the main stem of the James River," said Brian Watson, DWR Aquatic Resources Biologist and State Malacologist. "From a rare species standpoint, trying to recover

it in the James River and maintain its population there is important for maintaining the survival of the species as a whole. We have to get it back into the main stem James River in order for the species to be healthy across the entire watershed."

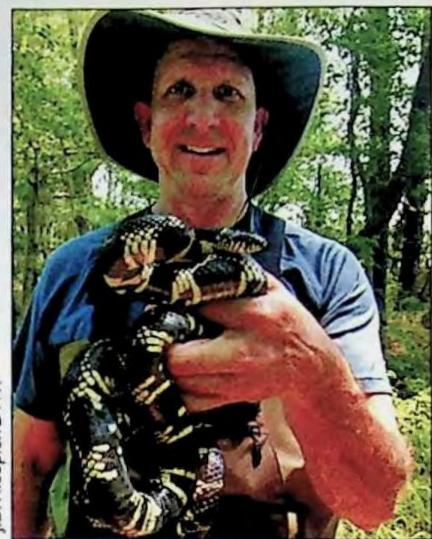
On the western side of the state, DWR released 125 of the Appalachian monkeyface mussel into the Clinch River. The only known native population of Appalachian monkeyface exist in a 10-mile stretch of the Powell River straddling the Virginia-Tennessee border. DWR biologists at the Aquatic Wildlife Conservation Center in Marion made significant discoveries about propagating and raising Appalachian monkeyface in 2018 to 2020, allowing them to produce the individuals released.

"This is the rarest mussel species in Virginia, and one of the rarest in the United States," said Tim Lane, DWR Southwest Virginia Mussel Recovery Coordinator. "It was known to be in danger of extinction in 1976 when the Endangered Species Act came out of Congress. There really haven't been any positive recovery steps that have been taken for the species since. It's been 50 years and this is the first significant recovery action we've been able to take for this animal. It's pretty significant."



Meaghan Marchetti/DWR

Monitoring the Eastern Kingsnake



J.D. Kleopfer/DWR

DWR biologists began a long-term monitoring project of the eastern kingsnake (*Lampropeltis getula*) in 2022. Unfortunately, eastern kingsnake populations have sharply declined in parts of their range. Conservationists believe this may be attributed to the growing problem of invasive fire ants, which have expanded into southeastern Virginia. Collection for the pet trade has also been problematic. This project hopes to assess population sizes and raise awareness of this highly beneficial and charismatic species.

Eastern kingsnakes occur primarily in the Coastal Plain and Piedmont regions, but are also found in the Shenandoah Valley and Blue Ridge Mountains. They occupy a variety of habitats, including forests, fields, and swamps, but it's not unusual to find them in agricultural and suburban areas. It feeds primarily on mice, lizards, turtle eggs, and other snakes, including venomous species. Eastern kingsnakes are tolerant to the venom of our native pit vipers (cottonmouth, timber rattlesnake, and copperhead) and are believed to assist in controlling copperhead populations. Because of their constricting strength, twice that of a ratsnake, eastern kingsnakes are able to efficiently subdue and consume other snakes up to 20 percent larger than themselves.

DWR's Ruth Boettcher Honored

Ruth Boettcher, coastal wildlife biologist for DWR, received the 2022 William T. Hesselton Memorial Award, presented by the Northeast Association of Fish and Wildlife Agencies (NEAFWA) in recognition of excellence in conservation, research, monitoring, and management funded through the U.S. Fish and Wildlife Service's Wildlife Restoration grant program. Boettcher is responsible for a wide diversity of wildlife found in the Virginia's Eastern Shore, including shorebirds, seabirds, colonial nesting birds, sea turtles, and marine mammals.

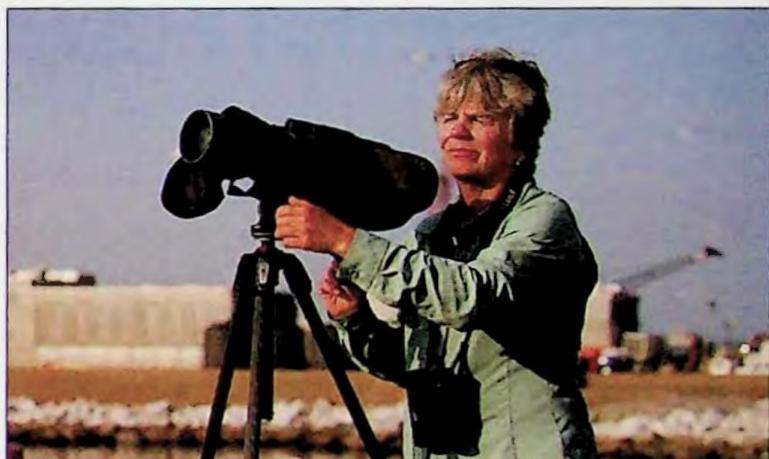
Among Ruth's many accomplishments during her DWR tenure, perhaps her most recognized is her work to relocate Virginia's largest seabird colony, displaced from its decades-old nesting site by the Hampton Roads Bridge-Tunnel Expansion Project. This colony of more than 25,000 birds includes five Species of Greatest Conservation Need and a state-threatened species; two

of the species nest nowhere else in the Commonwealth, and, for two other species, this location represents nearly half of all nesting effort in the state.

Ruth routinely works with the



Meaghin Marchetti/DWR



Meaghin Marchetti/DWR

U.S. Fish and Wildlife Service and The Nature Conservancy to survey and monitor the breeding success of the federally and state-threatened piping plover, the state-threatened Wilson's plover and the American oystercatcher in the barrier island/saltmarsh complex seaward of the lower Delmarva Peninsula. She also helps coordinate and participates in Virginia's coast-wide colonial waterbird breeding surveys and conducts annual seabird breeding surveys. Ruth has conducted research on the reproductive success of American oystercatchers in the Chesapeake Bay, assessed the hatching success of wading birds on the Eastern Shore, and has published and co-authored multiple peer-reviewed papers.



Farewell From Luke

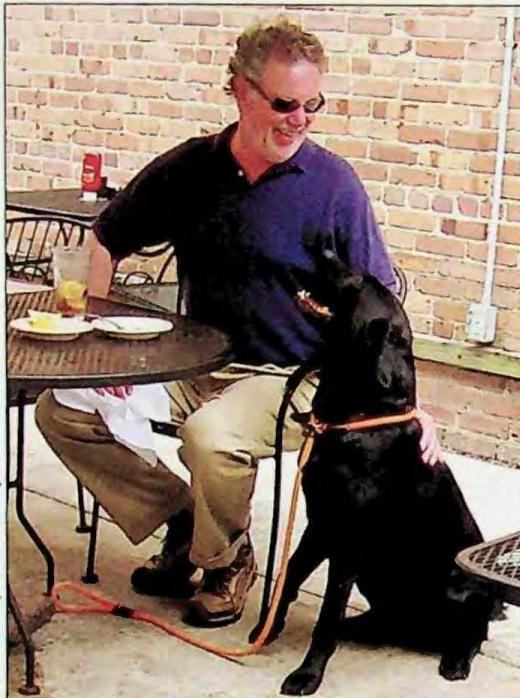
His parents answered to Hope and Lug Nut. I made my decision from a litter when he picked up a small leaf in his mouth and, with a little coaxing, brought it to me. I had no idea what life-changing events that tiny puppy from Powhatan, Virginia, would bring me, but maybe he did. I named him Luke, short for Chastain's Good Luke Charm.

For the first few months, we practiced retrieving old socks and tennis balls. Crate training, bathroom etiquette, and obedience lessons progressed along. Next came professional retrieving training by Kristen Hoffman of Louisa County. As she reviewed his pedigree, she remarked, "You do not know what you have in this dog! He has the makings of a field trial champion." That meant he would travel with her to competitions. But Luke and I had already agreed we were inseparable and so, we would thrive in our own adventures.

Luke's nose and his keen ability to follow a scent trail allowed us to participate regularly in pick-up teams on pheasant shoots in the Charlottesville area, which I wrote about in the August 2005 issue of *Virginia Wildlife* magazine (A Picker's Up, Pick Me Up). There, we met the assigned photographer, Dwight Dyke, who is also one of the top dog photographers in the country, which led to Luke's "modeling" career, placing him on the cover of Labrador retriever calendars for several years.

Combine an enthusiastic 5-year-old boy with a philosophic sage—that was Luke! What began as a series of emails written to friends and family during a

Both courtesy of Clarke C. Jones



road trip to Montana in 2007—emails written from Luke's point of view—evolved into the *Off the Leash* column, beginning in August 2009. The editor at the time, Sally Mills, took a chance on us and the column has been a favorite of readers since. He has many ardent fans and we've been grateful for the numerous fan letters he's received, ranging

from subscribers to folks waiting in the doctors' offices.

Luke was a fantastic hunting retriever and writing inspiration and, as with many pets, a wonderful companion. He was steadily by my side as we explored Virginia, plus most of the rest of the country from Maine to Florida to Idaho and back. When I put on dress pants instead of jeans or hunting pants, Luke understood that he would be staying home—and we would both be sad-faced. He would sit by the window at a certain time of the day looking for me to come home. Instinctively, he knew when I needed him near me. I could just sit alone, lost in thought, and he would quietly approach, stick his head under my arm and lift it so it would fall on his neck. My worries seemed to calm every time he did that.

At bedtime, Luke would approach my side of the bed and put his front paws on top of the mattress. I would rub his head, telling him what a great dog he was, that I loved him, and would see him in the morning. After that, he'd go lie down in his bed and give a big sigh, and I would turn out the light.

Then it was time...

Not long after, I stopped by to visit friends. As I got out of my truck they questioned me, "Where's Luke? Did you bring Luke?"

"He's right here." I replied, tapping my hand to my chest.

"Always."

Luke spent many sunrises hunting up good stories with Clarke C. Jones, and thankfully, left us a cache of colorful tales. You can learn more about Clarke and Luke at clarkecjones.com. This will be Luke's last Off the Leash column for Virginia Wildlife.



A Walk in the Woods

Column and photo
by Mike Roberts

The Adventures of Jack and Jill: Virginia Opossums

According to Colonial records, Captain John Smith was the first European to document presence of the "opassom" in the New World. His written account was "it hath the head of a swine... tail like a rat... the bigness of a cat." The name was a likely mispronunciation of the Algonquian word "apasum," meaning "white animal." And there was mention in those early transcripts about the creature being similar in taste to pork, which is understandable, because fresh meat was extremely scarce during the first few years at Jamestown.

From a physiological standpoint, the Virginia opossum (*Didelphis virginiana*) is quite unique. For starters, it has 50 teeth—more than any other land mammal in North America. When threatened, they are quick to hiss, growl, and expose those intimidating, sharp canines. Though primarily ground dwellers, opossums are effective climbers, often ascending trees to escape predators and to forage on fruit and berries. Much like primates, opossums have opposing thumbs on both hind feet, which are beneficial for grasping branches while climbing. They also have a prehensile

tail used as a climbing aid. Amazingly, the opossum is immune to the venom of pit vipers, because of certain proteins in the mammal's blood. What's more, as opportunistic feeders, they sometimes kill and eat venomous snakes.

With black, hairless ears; a long, scaly tail; and silver-tipped guard hairs, male Virginia opossums, called jacks, weigh 6 to 7 pounds on average; and can



be 30 or more inches in length. Females, called jills, are typically smaller in size and weight. The face is white and has multiple rows of 3- to 4-inch-long whiskers.

Perhaps the most bizarre part of the Virginia opossum's natural history is the birthing process. The opossum is the only member of the marsupial family inhabiting North America, and the female gives birth to a litter of up to 20 babies after just two weeks of gestation. No larger than honeybees, the "pinkies" are born hairless and blind, with a nub of a tail and stubby, undeveloped hind feet. Using fully developed front feet, including toenails, the young instinctively crawl from the birthing canal through the maze of hair to the belly pouch. Inside the protective pouch are 13 nipples arranged in a manner to accommodate the growing babies.

To survive, a baby opossum must make this perilous journey and then locate and attach its mouth to a nipple for nursing. If there are more babies than nipples, those unable to feed soon perish and are removed from the pouch by the female. The young remain inside the incubating pouch for nearly three months. Afterward, the juveniles crawl out and hitch a ride on the female's back. At 100 days of age, the young are weaned and disperse.

Opossums are omnivores, feeding on insects, fruit, earthworms, crayfish, frogs, salamanders, eggs of ground-nesting birds, carrion, and human refuse. Because they do not hibernate, these nocturnal animals must search for food throughout the year. Opossums do, however, seek shelter in underground burrows during extremely cold temperatures.

The Virginia opossum has an unusual means of surviving attacks from predators. They do what looks like feigning death. They go into an involuntarily state of catatonic shock or, in lay terms, suspended animation. When threatened, the body goes limp; the mouth is agape and drools saliva; feces and an offensive smelling, green mucus are voided; and the heart rate is greatly reduced. Predators sometime avoid animals they do not kill. Soon after the danger has passed, the opossum "comes back to life" and scampers away to safety.

A lifelong naturalist and wildlife photographer, Mike Roberts enjoys sharing his knowledge with others. You can contact him at: return2nature@aol.com.

Fare Game with... MASTER CHEF WADE TRUONG

If there is one dish that sums up my taste, cooking style, and hunting philosophy, it would be this pho.

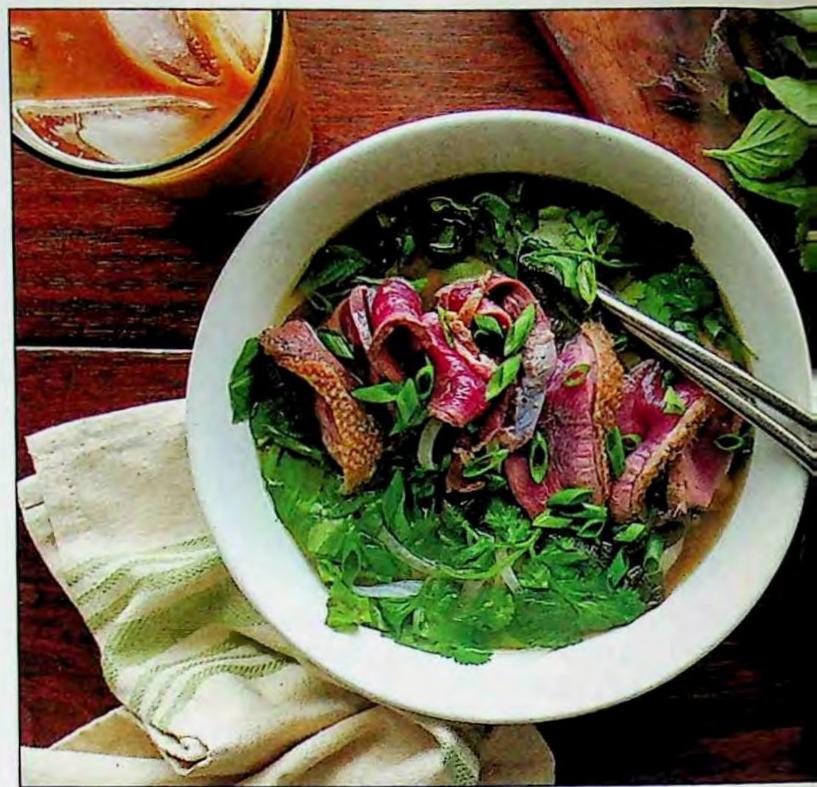
Pho is to Vietnamese cuisine what the burger is to America. It's a ubiquitous dish that has as many variations as its Western counterpart. It's a dish that I grew up eating at home, a dish that I craved when it wasn't available, and a dish that has evolved with my life more than any other.

At its core, pho is a consommé, usually beef based, seasoned with a myriad of spices. It should be clearish in color, yet rich with umami and heavy on the mouth feel. If you've ever made a proper consommé or bone broth or demi-glace, you understand that the key ingredients are bones and all the connective bits that come with them. Marrow, tendon, and cartilage add collagen to the broth, which gives it a rich mouthfeel. The broth should never taste watery, and when it's refrigerated, it should have some Jello-like jiggle to it.

Pho is everything I love about food and food culture. It's a food I have strong emotional ties to, but more than anything else, it's a blending of ingredients, cultures, time, and place. It also utilizes the scrap bits—the stuff that would normally be thrown away—to make a refined broth that meat alone could not. It allows me to use as much of every animal as I can. It's making the most of what you have, taking scraps and building something beautiful out of it—peasant food at its finest.

Since I started hunting, I've been making pho with wild game. I've made pho from venison, beavers, squirrels, turkeys, ducks, geese, and blends of all the above. All of them have been good, but I favor the batches made from waterfowl. The key is to use a lot of bones, preferably with all the connective bits. And ducks and geese have lots of this key ingredient. On top of that, the usually discarded feet are full of collagen, and these add a ton of body to the broth. Waterfowl has that familiar beefiness to it, but with an additional layer of complexity. You get a deep richness that is hard to replicate, and because they're wild birds, it's also never exactly the same.

My recipe below is just that, "my" recipe. Everyone you ask, every recipe you read, will have something different about it. I make no claims that this is the "best," the "greatest," or the "most authentic," but it's how I make mine, using what I have, and the way I like to do it. It's a good place to start to learn how to make it your own.



Waterfowl Pho

Ingredients:

4 goose or 8 duck carcasses, or any combination of (the more the better)

Half-gallon re-sealable bag of goose or duck feet (the more the better)

1 large onion

1 large piece of ginger

¼ cup fish sauce

½ cup sugar

1 tbsp MSG

salt to taste

Method:

Place cleaned carcasses and feet on a baking sheet or roasting pan. Be sure to give the feet a few good whacks with a heavy cleaver—this will allow the collagen to render into the stock. If necessary, cut carcasses into smaller pieces so it all fits on the sheet. Roast at 350-375°F for 45 to 90 minutes until the bones are a crisp, dark brown. Do not allow them to burn. Remove from the oven and place bones in a large stockpot, discarding rendered fat.

Halve the onion and chunk of ginger and char the cut side of each in a pan or on the grill. Get a nice dark brown color on them. Put them in the stock pot with the bones.



Fill the stock pot with water (around 3 gallons), leaving 2-3 inches to the brim. Bring to a steady simmer, adjusting heat as needed. Once at a simmer, adjust heat so that only one or two bubbles come to the surface every second or so. Allow to very slowly simmer for four to six hours minimum, but overnight is even better. The longer you let it go, the more extracted the flavor will be. I usually let a batch of pho simmer for 12 to 24 hours.

Once ready, strain the stock through a fine mesh chinois and discard bones, feet, ginger, and onion. Allow the stock to settle for a few minutes and skim the fat and scum from the top. Return the stock to the pot and bring it to a steady simmer,

continuing to skim the top of the stock until it has reached the desired clarity.

Optional: for a clearer stock, whip a few egg whites together and while the stock is at a very slow simmer, pour the whites into the stock. The small particles will stick to the whites as they cook, and the entire egg white can be skimmed out.

Add Spices:

I use the following mix, but everyone has their own:

3 cinnamon sticks (preferably Saigon cinnamon)

8 star anise pods

~24 green cardamom pods

6 black cardamom pods

½ cup coriander seeds

12 cloves, whole

½ cup fennel seeds

Optional: use a cheesecloth and butcher twine to tie the spices up into a little bag before placing in broth.

Add these to the stock and simmer until broth is fragrant, around one hour. Too long and I find the stock becomes a bit overwhelming. Remove the spice bag or strain out spices with a mesh sieve. For the final seasoning, add fish sauce, sugar, salt, and MSG. Season lightly and make adjustments.

If you own a pressure canner, you can preserve the stock by canning at 10 lbs pressure (adjust for altitude if needed)

for 20 minutes in pint jars, or 25 minutes in quart jars. Do not hot water bath-can stock. The canned stock will lose a little richness due to the collagen disintegrating during the canning process, but it's great to have on hand for quick winter meals.

To Serve:

Soak rice noodles in warm water, strain, and dunk in boiling water for a few seconds. Separate noodles into large bowls. Top with sliced, braised or confit meat (optional) and pour hot stock over the meat, top with garnishes, and consume.

Toppings & Garnishes:

Thai basil, cilantro, onion and lime are cornerstones in my opinion. Use what you have and try different things.

Thai basil

Cilantro

Thinly sliced onion

Scallions, chives, or garlic chives

Culantro (Mexican coriander)

Shiso (perilla)

Mung bean sprouts

Mint

Lime

Hot peppers (jalapeno/thai chili)

Hoisin sauce

Sriracha

Meat:

The options here are endless. Here are a few of my favorites:

Shaved, lightly charred goose or duck breast

Duck or goose confit

Hoisin-braised venison shank

Raw, shaved venison tenderloin

Goose or duck hearts, sliced thin

Wade Truong is a lifelong Virginian and self-taught chef and hunter whose work has been featured in The New York Times and Garden & Gun. To learn more about Wade and his company, Elevated Wild, check out: elevatedwild.com



GOOD READS

An Excerpt From...

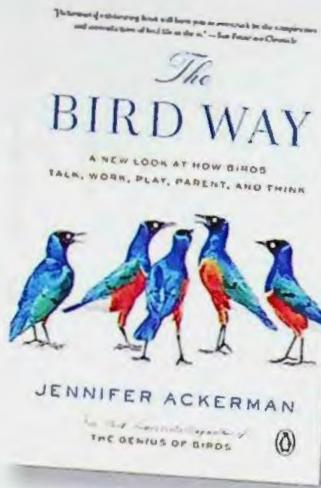
The Bird Way: A New Look at How Birds Talk, Work, Play, Parent, and Think

by Jennifer Ackerman, published by Penguin Press, an imprint of Penguin Publishing Group, a division of Penguin Random House, LLC. Copyright © 2020 by Jennifer Ackerman.

From the New York Times bestselling author of The Genius of Birds, a radical investigation into the bird way of being, and the recent scientific research that is dramatically shifting our understanding of birds—how they live and how they think.

The idea for this book was seeded in conversations about novel bird behaviors with Louis Lefebvre of McGill University during research for my last book, *The Genius of Birds*. More than two decades ago, Lefebvre invented the first scale of intelligence for birds, based on a bird's behavior in the wild. How inventive is the species in its natural environment? Does it make use of new things and find creative solutions to the problems it faces? Does it try new foods? These activities are indicators of what's called behavioral flexibility, which is one fairly reliable measure of intelligence. It's the ability to do something new—to change your behavior to address new circumstances and new challenges. Ornithological journals are full of short reports of these kinds of odd and interesting doings. Lefebvre had combed through journals of the past seventy-five years and found more than two thousand reports of these sorts of innovative behaviors in birds of different species. A prime example was the hooded crows that stole fish from ice fishermen by tugging on their lines with their beaks and walking across the ice as far as they could go, then returning for another stretch of line, stepping on it each time to make sure it didn't slip back.

A recent, more high-tech instance of bird ingenuity popped up in 2018 when a scientist tracking western gulls with geolocators to see where they fed was puzzled to see a gull traveling at sixty miles per hour for a distance of seventy-five miles, crossing the Bay Bridge from San Francisco to Oakland and traveling along the interstates before returning by the same route to her nest. It turned out that the gull, a female breeding on the Farallon Islands west of San Francisco Bay, had hitched a ride on a garbage truck bound for an organic composting facility in the Central Valley near Modesto. At first the researcher thought the bird might have gotten trapped in the truck. But then, two days later, the same thing happened. Clearly, this gull was using its head (if not its palate—as one



Bay Area news reporter quipped, "It might be the only time a San Francisco resident ever drove to Modesto for dinner.").

Scientists traditionally have little use for anecdotal evidence, demanding data that can be replicated or manipulated statistically. But a single observation by a competent and honest observer of a bird doing something exceptional can offer a rare window into a bird's flexibility of mind. The reports are anecdotal, to be sure, but together they produce plentiful evidence of the ability of

birds to solve problems or discover new and better ways to accomplish daily tasks.

The point is this: Novel or unusual behavior is often intelligent behavior.

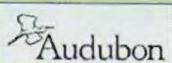
When I asked scientists from all over the world for examples of striking bird behaviors in the wild, again and again they led me to stories of ingenuity and cleverness—smart strategies, sometimes rooted in evolutionary wisdom, but more often based in a bird's capacity for complex cognition. That's broadly defined as the ability to acquire, process, store, and use information in different contexts. In the past decade or so, birds have revealed their ability to solve problems using advanced cognitive skills rather than simple instinct or conditioning, learning by association. These sophisticated mental skills—such as decision-making, finding patterns, and planning for the future—are what allow birds to flexibly fine-tune their behavior in response to challenges of all kinds over their lifetimes.

Only lately has science illuminated how birds can be smart with a brain at best the size of a walnut. In 2016, a team of international scientists reported their discovery of one secret: birds pack more brain cells into a smaller space. When the team counted the number of neurons in the brains of twenty-eight different bird species ranging in size from the pint-size zebra finch to the six-foot-tall emu, they found that birds have higher neuron counts in their small brains than do mammals or even primates of similar brain size. Neurons in bird brains are much smaller, more numerous, and more densely packed than those in mammalian and primate brains. This tight arrangement of neurons makes for efficient high-speed sensory and nervous systems. In other words, say the researchers, bird brains have the potential to provide much higher cognitive clout per pound than do mammalian brains.



OUT & ABOUT

UPCOMING EVENTS



December 14 - January 5
Audubon Christmas Bird Count
[audubon.org/conservation/
join-christmas-bird-count](http://audubon.org/conservation/join-christmas-bird-count)



January 14 - 15
Virginia Fly Fishing Festival
vaflyfishingfestival.com/



January 20 - 22
Richmond Fishing Expo
richmondfishingexpo.com/



January 27 - 29
Virginia Beach Winter Wildlife Festival
[vbgov.com/government/
departments/parks-recreation/
special-events/Pages/
winter-wildlife-festival.aspx](http://vbgov.com/government/departments/parks-recreation/special-events/Pages/winter-wildlife-festival.aspx)

February 4
Youth & Veterans Waterfowl Hunting Day
virginiawildlife.gov/hunting/youth/



February 17 - 20
Great Backyard Bird Count
birdcount.org/



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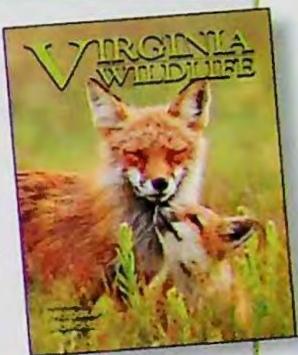
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LET'S SEE YOUR BEST WORK!

2023 Virginia Wildlife Photography Showcase issue

Submissions are now being accepted online at:
virginiawildlife.gov/virginia-wildlife/photo-showcase-entry/

DEADLINE: Monday, February 6, 2023



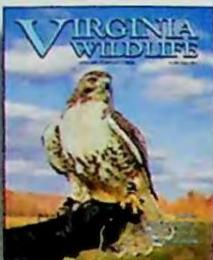
PICS FROM THE FIELD



Congratulations to **Gabriel MacDonald** of Virginia Beach for his lovely photograph of a blue jay with a beak full of acorns. This image was taken at Meadowview Park. Gabriel used a Canon EOS R6 DSLR camera, Canon RF 800mm f/11 IS STM lens, ISO 4000, 1/250, f/11.

You are invited to submit up to three of your best photographs for possible publication in *Pics from the Field*. Please include contact information (email and phone number, city or county you live in) and send only high-resolution (minimum size, 4"x6" at 300ppi) jpeg, tiff, or raw files via email attachment or WeTransfer to: Lynda.richardson@dwr.virginia.gov. We look forward to seeing and sharing your best work! HAPPY SHOOTING!

Virginia Wildlife Magazine 2022 Annual Index



January/February 2022

Falconry Gives a Front Row View of Nature at Work,
By Molly Kirk/DWR

The ancient art of hunting with raptors requires dedication and passion for the sport and the birds.

Catching Up with Jim Crumley, By Ken Perrotte
The creator of Trebark camouflage turned an idea into an empire, but he still enjoys the simple life in Virginia.

Seldom Seen: Virginia's Flying Squirrels,
By Todd Fredericksen, Rick Reynolds/DWR, Mark Ford, Mike Fies/DWR

These nocturnal, gliding rodents are as fascinating as they are elusive.

Caught on Camera: Game on WMAs, By Pete Acker/DWR
Trail cameras show ample populations of game species on Wildlife Management Areas.

Eels Keep the Mystery Alive, By Ashley Stimpson
Eels have baffled us for millenia, but now we know enough to help them survive.

March/April 2022

A Search for the Living Jewels of the Appalachian Mountains,
By Loughran Cabe and J.D. Kleopfer/DWR

Virginia hosts more than 50 species of salamanders, all unique and fascinating creatures that are often overlooked.

Keeping Up with the Peregrines, By Sergio Harding/DWR and Meagan Thomas/DWR

The live stream video of a breeding pair of peregrine falcons is entertaining and educational for the public, but also provides valuable data for biologists.

No Turkey Yet, By Kieran Zwirner

Hunting turkey isn't easy. It takes time in the woods and patience.

Using Small Spaces to Support Pollinators, By Glenda Booth

The Virginia Department of Transportation is taking advantage of roadside sites to plant pollinator-friendly vegetation.

Citizen Science is a Great Way to Connect Kids to Nature,
By Emily M. Grey

Engaging children with the natural world expands their horizons.

Dynamic, Dazzling Darters, By Michael Pinder/DWR

These bright, unique fish are often overlooked in Virginia's waters, but they're fun to find.

May/June 2022

Good Fire on the Mountain, By Ron Messina /DWR
Prescribed fire has benefits for wildlife and their habitats.

Marshall McDonald Left His Legacy in Virginia's Fisheries,
By Donald J. Orth

The inventions and ideas of this 19th century fisheries commissioner made an impact that's still visible today.

Explore the Wild with Primitive Camping on Wildlife Management Areas, By John Kirk/DWR

Primitive camping is another way to enjoy WMAs.

Awaken the Senses While Float Fishing, By Gerald Almy
Spending time floating down the river can connect you to the sights, sounds, and smells of the natural world.

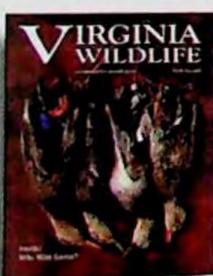
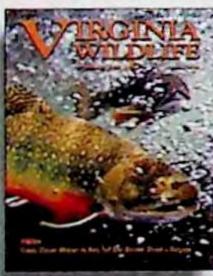
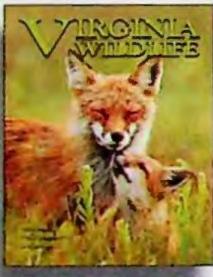
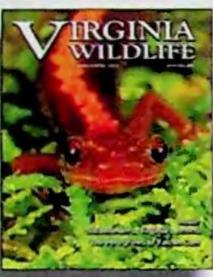
Leonard Lee Rue III Captures Wildlife Like No Other,
By Mike Roberts

The legendary wildlife photographer, videographer, and author has made an impact on the world of wildlife conservation.

The Spawning Behavior of Smallmouth Bass, By Bob Michelson
As waters warm, this popular sport fish begins to reproduce.

July/August 2022,

Annual Photography Showcase Issue



September/October 2022

Cool, Clear Water is Key for the Brook Trout's Future,
By Molly Kirk/DWR

While Virginia's charismatic state fish is facing some challenges, efforts are underway to help it thrive.

Environmental DNA is an Exciting New Tool for Biologists,
By Evan Visconti

DNA found in water can help track species and conserve them.

Fantastic Fungus, Story and Photos by Byron Meade
Mushrooms bring an intriguing pop of color to the woods.

The Shop Time Forgot, By Dr. Peter Brookes

For four decades, Phil Evans of Rod & Reel Repair has been part of the heart of Northern Virginia's angling community.

Marsh Magic, By John Page Williams

Vegetation in tidal fresh marshes fuels a variety of wildlife.

The Clinch River is the Crown Jewel of the First Blueway State Park, By D. J. Mathews

Development of the Clinch River State Park will provide Virginians with an opportunity to enjoy even more of the most biologically diverse river in the northern hemisphere.

November/December 2022

Why Wild Game?, By Wade Truong

A noted chef explains how his perspective on food shifted when he started hunting.

Water Wolves: Virginia's Apex Predator Fish, By Matthew Reilly
These elusive fish make for a memorable angling experience.

When a Hat Isn't Just a Hat, By Ethan Hunt/DWR

The Virginia Wildlife Grant Program seeks to help connect everyone with the outdoors.

Robin Clark Will Leave a Legacy of Helping Others Overcome,
By Ken Perrotte

The avid hunter and angler has worked for decades to make the outdoors accessible for all.

Managing Hardwoods for Wildlife on WMAs, By Justin Folks/DWR
Timber harvesting on Wildlife Management Areas is an essential tool for wildlife habitat management for many reasons.

Neighbors Join Forces to Build a Quail-Friendly Wildlife Corridor,
By Marie Majarov

Neighbors worked together to connect their properties with bobwhite quail-friendly habitat that also benefits many other species.

USPS Statement of Ownership, Management, and Circulation

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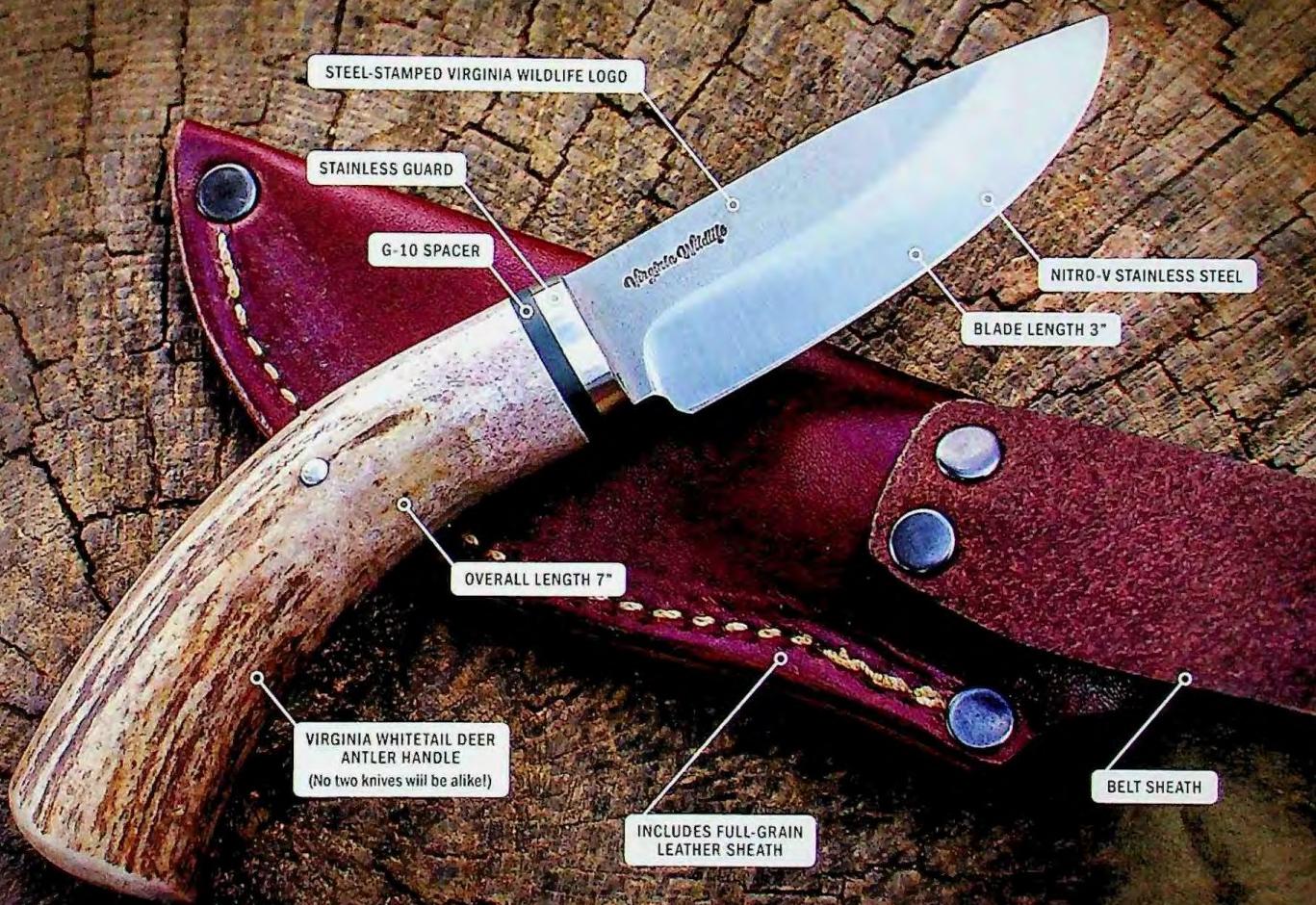
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Paid Distribution by Other Classes of Mail Through the USPS	6	6
Total Paid Distribution	24,306	24,441
Free or Nominal Rate Outside County Copies Included on PS Form 3541	none	none
Free or Nominal Rate Copies Mailed at Other Classes Through USPS	85	572
Free or Nominal Rate Distribution Outside the Mail	450	450
Total Free or Nominal Rate Distribution	535	1,022
Total Distribution	24,841	25,463
Copies Not Distributed	1,325	537
Total	26,166	26,000
Percent Paid and/or Requested Circulation	97%	96%

Limited Edition Whitetail Antler-Handle Knife

This stunning handcrafted creation (made locally in RVA!) is now available at VirginiaWildlife.gov/Shop. Store proceeds benefit the Virginia Wildlife Grant Program, which supports local non-profits and schools to connect underserved communities to the outdoors. Thank You!



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Magazine 2022 Annual Index

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By Ken Derrorte

September/October 2022

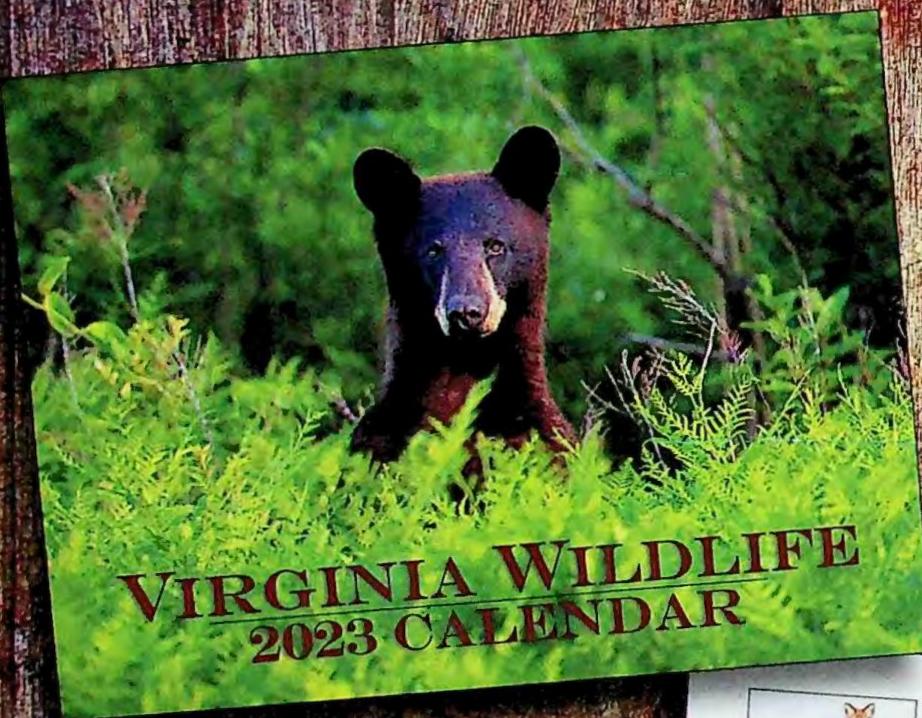
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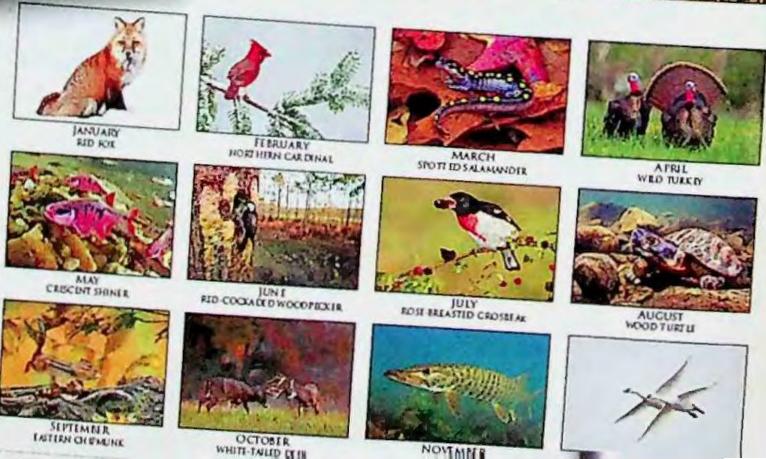
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